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Original Communications.

HYOSCINE.—ITS PHYSIOLOGICAL AND THERAPEUTIC ACTION.

By H. C. Wood, M. D.*

EVERY reader of therapeutic literature must have noticed the great diversity of experience and sentiment which exists in regard to the therapeutic action of hyoscyamia. By some physicians it is believed to be of great value as a calmative and hypnotic remedy, whilst others have found it almost inert; and others, equivalent in its influence to atropia. Its commercial form is almost as various as its action; it occurs both crystalline and amorphous, and when it is stated, as by Dr. Judson B. Andrews, Superintendent of the Buffalo State Insane Asylum (*New York Med. Journal*, June 14, 1884), that very extended trial shows that the most reliable form is Merck's *uncrystallized* hyoscyamine, suspicion is at once aroused, because crystalline principles are, as a rule, much purer than amorphous ones; and such statements suggest that it is not the hyoscyamine itself, but some other active cohering body, to which the uncrystallized hyoscyamine owes its virtues.

It is very curious that the profession,

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and especially alienists, have so universally ignored the labors of Ladenburg, although his results were fully set forth in the last edition of the United States Dispensatory. This German chemist has shown that the so-called *amorphous hyoscyamine* is a more or less impure alkaloid, essentially distinct from true or *crystalline hyoscyamine;* this second alkaloid, *hyoscine*, affords crystallizable salts, of which at least two are now commercially prepared by Merck.

It is plain that our older clinical and experimental records in regard to these alkaloids are of value chiefly as suggestions, and that to get definite results, investigations must be made with the crystallized, and, therefore, presumably pure salts. The present article is offered as a study of one of these alkaloids, namely, *hyoscine*. The salt used was Merck's crystallized hydrobromate, or in a few trials, hydriodate. It will be understood, therefore, that throughout this memoir the word hyoscine is used as meaning the hydrobromate, or hydriodate of hyoscine.

The first series of experiments were made upon the frog. It was found that this animal was sensibly affected by $\frac{1}{2000}$ of its weight of hyoscine, but in none of the nine experiments made to ascertain the minimum fatal dose, did less than $\frac{1}{500}$ part of the frog's weight cause death. The symptoms were very uniform. They consisted of an increasing sluggishness with a progressive loss of voluntary movement, and a corresponding depression of the reflex activity; but without marked loss of sensibility. The respiration seemed to suffer *pari passu* with the general muscular power.

In numerous trials I was not able to make out a distinct stage of reflex excitability at any time; but in one or two experiments without section of the spinal cord, when the frog laid absolutely quiet upon his back, making no effort to regain the natural position, touching him would cause violent universal movements, which seemed to be purposive, but were so wild, ungainly and repeated that I was not sure that they were not convulsive. There was at no time any tetanus. During the recovery from the effect of large but non-fatal doses, the normal muscular power was gradually restored without any convulsive manifestations, such as occur in the frog after atropia-poisoning.

Death was brought about by failure of breathing, the heart beating for a considerable time after the arrest of respiration. When a strong solution of the alkaloid was placed upon the exposed heart it exerted only a very slow and feeble depressing influence.

After death the muscles and the motor nerves were found to respond to the feeblest galvanic currents in a normal manner: tying the femoral artery so as to isolate a leg, did not affect the supervention of the palsy in that leg, when the poison was injected into the anterior part of the body, and after death the motor nerves and muscles of the protected leg were found not to be more sensitive than those to which the alkaloid had access.

These experiments were sufficient to demonstrate that upon the *frog hyoscine* acts as a *motor spinal depressant, killing by arresting respiration probably through a centric influence; that when recovery occurs there is no stage of tetanus following the palsy;* and that any influence the alkaloid may exert upon the circulation is of a depressive character, but is so slight as to be of no importance.

The next series of experiments were made upon mammals. Hypodermic injections were given to three mice, the doses being respectively 0.002 grm. (0.03 grain.), 0.004 grm., and 0.006 grm.; only after the last dose was any distinct effect perceptible. This mouse became very quiet and lethargic, but finally recovered.

On a subsequent occasion 0.025 grm. injected into a mouse caused in three minutes violent general tremblings, and a minute later the animal suddenly expired. The injection of 0.006 grm. produced in fifteen minutes in a white mouse, quietness, with a marked loss of jumping power. 0.012 grm. was then injected, and in one and a half minutes the breathing became sensibly affected and the animal had nearly lost the power of crawling. Four minutes later the respiration was very slow and labored; in four minutes more the red eyes had become black-cherry colored and the mouse was gasping; a few seconds subsequently convulsions came on and the animal soon died. A very large white mouse was killed by 0.012 grm. in one hour and seven minutes.

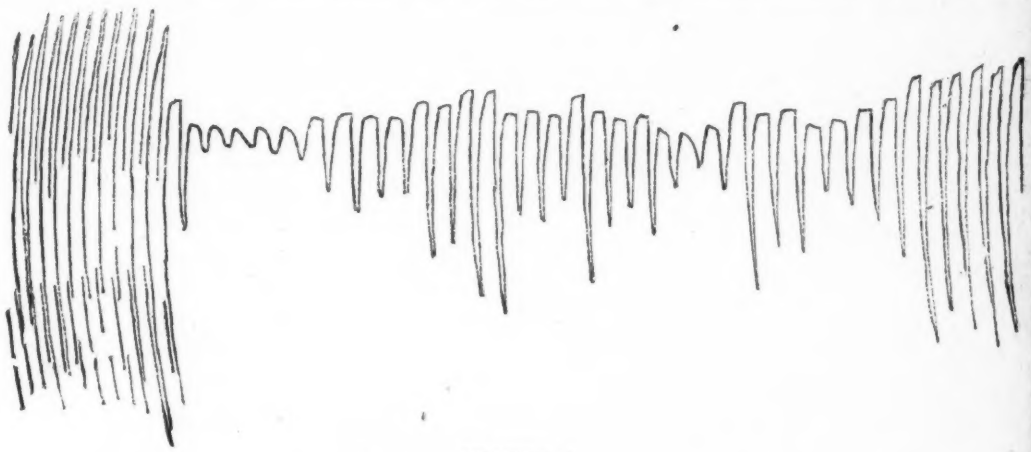
In all of these cases, as well as in some not detailed, the symptoms were similar, except that distinct convulsions occurred in one case: the manifestations were progressive weakness and quietude, great disturbance of respiration, the movements becoming distant, slow and very labored, but afterwards more shallow, asphyxia, (as shown by the red eyes of the white mouse becoming black and extraordinarily projecting,) convulsive movements and death; the heart continuing to beat forc-

ibly after the extinction of the respiratory function.

Owing to the great costliness of the drug, but one general experiment was made upon the large mammals. 0.17 gramme of the hyoscine injected into the jugular vein of a small dog caused him in a few minutes to seek out a corner, and curling himself up, go to sleep. The pupils were widely dilated, and during the sleep there was repeated purging of yellowish watery stools.

The general effects of the alkaloid upon mammals seem to coincide with those caused by it in frogs; but in order to determine more positively its influence upon the functions of respiration and circulation, special experiments were performed.

The first series were directed to the respiration: In experiment 1 (upon a rabbit) the respiration-rate under the influence of the doses used, fell from 90 per minute to 25. The amount given altogether was 0.096 grm., or nearly 1½ grains of the salt. In experiment 2 (upon a rabbit) the results were not so simple; the respiration-rate fell for a time, but afterwards became more frequent. At this period it took on a markedly Cheyne-Stokes character, as shown



TRACING A.

in the tracing (A) herewith given. Finally the breathing became very shallow, with intervals during which it was so nearly imperceptible that the animal was several times thought to be dead. In experiment 3 the respirations seemed to be increased in number by the drug, but were rendered very shallow and irregular. The cause of the markedly Cheyne-Stokes respiration it is impossible at present to determine, but it is very plain that the alkaloid has a markedly depressing influence upon the respiratory function, and in all probability upon the respiratory centres.

The next two experiments were made upon unmutilated animals in order to test the action of hyoscine upon the arterial pressure. They proved that the alkaloid exerts only a very feeble influence upon the heart or vasomotor system. In experiment 3 two injections of a half-grain each into the jugular vein of a rabbit, caused a fall of the arterial pressure in about 10 minutes from 140 to 112; the pressure, however, rapidly recovered itself, and in half an hour rose to 168, as far above the normal as it had fallen below.

In Experiment 4 four injections of 0.05 grm. each into the jugular vein of a dog weighing 15 pounds (in all, 3 grains of hyoscine), failed to have any distinct effect upon the blood pressure, which was, in fact, a quarter of an hour after the last injection, a little above the normal.

When an injection of hyoscine is first thrown into the jugular vein, there is a slight temporary fall of the arterial pressure, which comes on so immediately that it is probably due to a direct action upon the heart. The slight rise of the pressure which occurred near the close of each of the experiments may very plausibly be explained as the result of asphyxia. This is strongly corroborated by the fact that in an experiment (5) made upon a young pup, the pressure rose throughout. Such inconstancy of action indicates the existence of one or more indirect influences exerted by the poison. In order to get rid of any asphyxiating action and consequent secondary circulatory phenomena, manometrical studies were next

made upon curarized animals, kept alive by artificial respiration.

The experiments were two in number, as follows:

EXPERIMENT 16.

A young cat, about seven weeks old; section of pneumogastrics; woorari; artificial respiration; canula in carotid.

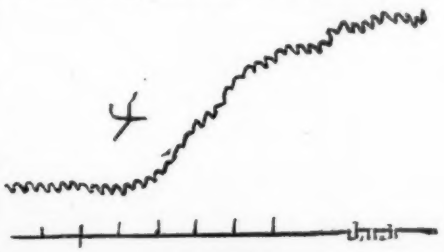
Time. H. M. S.	Drug. Grains.	Pulse.	Art. Press.	Remarks.
5		240	120	
.10			122	
5.04	0.76			
5.04.10			100	
5.04.27		204	78	
5.04.35		204	60	
				Tracing B.
5.05.00			60	
5.10.00			100	
5.20.00			100	
5.21		240	100	Galvanization of a brachial nerve.
5.21.03			120	
5.21.05		180	140	
5.21.07			150	Current broken.
5.25	0.77		100	
5.25.10			88	
5.25.15			74	
5.45	0.76	216	110	
5.45			74	
5.45.05		168	60	
5.45.10		180	42	
5.51			60	
6.00.00			68	Current to nerve.
6.00.05			94	*Tracing C.*
6.00.10			116	Current broken.
6.04	0.76		60	In shifting drum, abscissa needle became displaced. It was replaced, but may not have been put in exact position. So that the numbers hereafter, whilst accurate in their relations to one another, may not be so to previous record.
6.10			8	Current to nerve.
6.10.10			8	No rise, although the individual pulse rate is very large and full.
				Tracing D.
6.20			8	Current to nerve.
6.20			8	No effect. Tracing D
		156	14	
6.31.30			28	
6.32				Artificial respiration stopped. No rise in the arterial pressure followed.
				During all this period of low pressure after the 4th injection, the pulse has been very large and regular; the individual waves being fully twice as large as those before any of the drug was given.

EXPERIMENT 17.

A large dog. Woorari and artificial respiration; section of pneumogastrics; injection in jugular vein.

Time.	Drug. Grains	Pulse.	Arterial Pressure.	Remarks.
12.51.30		96	74	
12.51.35	0.91			
12.51.39		80	60	
12.51.45		90	72	
12.51.52			56	
12.52	0.91			
12.55.56		85	40	
				Tracing E.
12.56.05		85	40	
12.56.09		85	40	
1.		80	56	
1.00.04			48	
1.00.12		88	56	
1.03		88	70	
1.04			64	
1.10			The pressure at this time is slowly and regularly rising and falling between 56 and 90, the curves requiring about 16 seconds for each cycle.	
1.24		100	Pressure curves as before, but maximum pressure is only 46, minimum 32.	
1.26	0.91			
1.27		100	14	Individual pulse wave seems full.
1.29				Stimulation of crural nerve by strong galvanic current; also production of asphyxia failed to cause rise of pressure.

In experiment 16 just detailed 0.75 grain of the alkaloid injected into the jugular vein of



TRACING B.

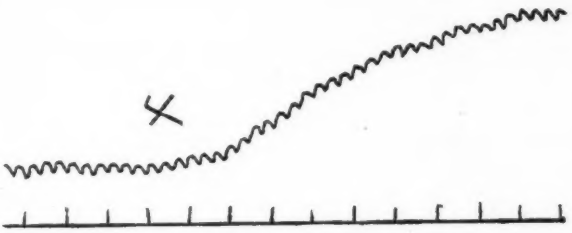
a kitten caused in 35 seconds a fall of the arterial pressure to one-half its norm, 120.

Five minutes later the pressure had steadied itself at 100. Two subsequent injections reduced this to 60, or thereabouts, but a fourth injection was required to depress the pressure nearly to zero. In Experiment G, two injections of 0.91 grains each into the jugular vein reduced the arterial pressure only from 74 to 60, and a third injection was required to bring the pressure down to 14.

The two experiments show that when hyoscine is given under such circumstances as to eliminate all respiratory disturbance, it steadily depresses the arterial pressure, but that to produce any decided effect enormous doses are required.

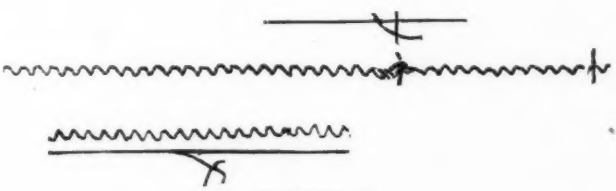
The comparatively large immediate depression which follows injection into the jugular indicates that cardiac depression is at least one cause of the fall, and the two experiments lend some countenance to this view.

During the course of experiment 16, trials as to the effect of galvanizing a sensitive nerve were made, and it was found that even after the injection of two and a quarter grains, the rise of arterial pressure, and consequently the vaso-motor spasm, followed very promptly upon the stimulation. This comparative immunity of the vaso-motor centre was corroborated in another experiment (Exp. 18) which it is not necessary to detail, in which after the injection of three grains into the jugular vein of a rabbit the stoppage of the artificial respiration apparatus caused a rise of pressure, which was nearly equal to that similarly produced before the administration of the drug. Both experiments (16 and 17) show, however, that finally the drug does cause a vaso-motor palsy; for in each there came a time in which, while the heart was still beat strongly, galvanization of a sensitive nerve failed to cause rise of pressure; also in experiments 17 and 18, asphyxia failed to cause any rise of the arterial pressure at a time when the heart was sending pulse waves fully as large as those that had come from it before the administration of the drug.



TRACING C.

The persistency at this time of the pulse wave indicates, also, that that the drug does not fully paralyze the heart until very late in the poisoning; not, indeed, until after the vaso-motor system. When the drug was administered to the uninjured animal, the pulse was usually, but not invariably, slowed, sometimes it was quickened. This would seem to indicate that the indirect actions of the drug upon the heart were sometimes, but not always, more powerful than any direct influence. When sections of the pneumogastrics and the use of woorari and artificial respiration had been practiced, the pulse was slowed by the drug. In no case was there any sign of influence upon the pneumogastrics. In two experiments, trials by stimulating their nerves galvanically were made in different stages of the poisoning, and neither augmented nor diminished excitability was found.



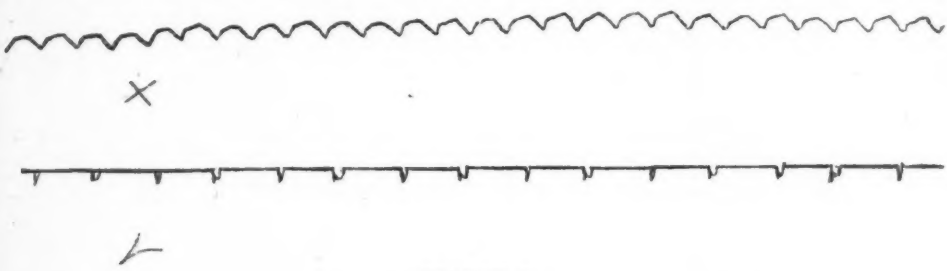
TRACING D.

The experiments which have been detailed show that *hyoscine* acts upon mammals chiefly as *a spinal depressant;* that it is a *centric respi-*

ratory depressant, causing death by asphyxia; that it has very *little effect upon the circulation*, what influence it exerts being in the normal animal set aside by the asphyxia it produces; that it does *not paralyze the pneumogastrics;* that in *enormous doses it paralyzes the vasomotor system;* that *on the heart itself, its influence is very feebly depressant.*

The final series of trials were made upon human beings. Whilst assisting me in the laboratory, Dr. F. E. Stewart accidentally swallowed a small quantity of a strong solution. The following statement is condensed from his account: The first symptoms were dizziness, dimness of vision, and inability to walk straight, due as described "to a want of coördination in my movements." About an hour later supper was taken, when the doctor became "very stupid and sleepy, and, as it were, a heavy weight hanging on my eyelids, which I found quite difficult in opening." The pulse was 60, slightly interrupted. There was also a sense of swimming in the head, and in a little while the desire to doze became irresistible, but the sleep was light and dreamful; a little later there was a distinct sense of suffocation, with pain in the forehead. The following notes referring to the later stages of the poisoning, were written by the doctor himself:

"My head now commenced to ache as though there was a tight constricting band around my forehead. Breathing, though not difficult, did not seem to relieve a sense of suffocation that now came over me, and every few minutes I was obliged to take a long breath for relief. I now began to wonder whether the stupor might not become too



TRACING E.

profound, so I attempted to rouse myself from the trance-like condition that appeared to be stealing over me, but the efforts were only partially successful. The clock now commenced to strike 8 o'clock, and I attempted to count the strokes, but arrived at eight only to hear the clock go on striking several times more, at which I was somewhat surprised.

The desire now took possession of me to go to bed and sleep off the effects of the drug. One of the gentlemen of the house just then came in to inquire my condition, but I could not realize his presence in the room. It seemed as if I were dreaming, and that my answers to his questions were part of the dream.

I now staggered into the next room, partially undressed, and got into bed, when I immediately fell asleep. I was awakened sometime afterward with no difficulty, by an inquiry for my health, but the presence seemed but a dream, and I again sank into a profound slumber, which lasted for an hour or more. I then partially roused and again attempted to count the strokes of the bell in the neighboring steeple, but lost the number before it was through striking, and it again seemed as though the clock struck a number of times too many.

I now became oppressed with a feeling of general uneasiness and unrest, and I tumbled in bed from side to side, vainly trying to move the load from my chest that seemed crushing me, and I spent the remainder of the night in this way, with occasional periods of complete insensibility in sleep. There has been no after-effect other than a slight headache, and general indisposition to exertion."

Drs. Wm. L. Abbott and Geo. B. M. Free, of the medical staff, Philadelphia hospital, took each $\frac{1}{100}$th of a grain of hyoscine hydrobromate hypodermically. Their report is as follows, largely, of course, made out from the notes of their fellow-resident physicians:

Effects were first noticed in about ten minutes, as a slight dizziness. This rapidly increased, so that it was almost impossible to walk straight. The feeling of lightness and giddiness was exactly like that produced by excess of alcohol. About half an hour after administration, dryness of throat came on. There was a sensation of restlessness, so that

it was difficult to remain quiet in spite of the giddiness. Extreme sleepiness soon developed after this. F. had a slight feeling of nausea. One hour after administration Dr. A.'s condition was as follows: "Face flushed; voice thick; mouth very dry; can scarcely speak; very sleepy; will hardly answer questions; said he felt as if he had had about eight beers, and as if he were slightly drunk." Pulse, 60. Dr. F.'s condition was noted: "Seems in a very deep sleep; not aroused by considerable noise in room; on being aroused, complains of great giddiness and looks pale." Pulse at 9:15 P. M., 48. A.'s at same time was 54. F. remained sleeping until some one aroused him and gave him an apple, he ate it, and lying down slept until morning; on awakening had no recollection.

Under my direction and supervision careful trials of the drug were made by Dr. Edward Martin, then resident physician in the University Hospital. There were in all eight cases, suffering, except in one or two instances, from diseases entirely indifferent to the drug, such as traumatic musculo-spiral paralysis, granular lids, etc. In order to avoid the fallacies of observation, so prone to occur when real or alleged hypnotics are given in the evening, the drug was administered near the middle of the day. The dose used was from $\frac{1}{300}$ to the $\frac{1}{120}$ of a grain, always administered hypodermically. The tabulated reports of the cases are before me, and I select one as typical, except in the effect upon the pulse and respiration.

MUSCULO-SPIRAL PARALYSIS (TRAUMATIC).

Time.	Dose.	Pulse.	Resp.	Remarks.
	Hyoscine Hydrobrom.			
3:45 P. M.	gr. $\frac{1}{120}$	76	19	Has had some frontal headache for two weeks.
3:55		76	20	Feels "light" in head. Headache worse.
4:00	gr. $\frac{1}{300}$	84	19	Pulse feels stronger and fuller.
4:05		96	21	Drowsy.
4:15	gr. $\frac{1}{300}$	96	19	Throat and mouth dry.
4:25		100	20	Dizzy. Gait unsteady. Lay down. Headache much worse.
4:30		102	18	Face flushed.
4:35		120	19	Sick at stomach. Slightly delirious.
4:50		102	20	
5:00		90	18	Sleeping.
5:10		90	18	Throat not so dry.
5:30		90	02	Sleeping at times.
6:00		84	18	Dizzy and a headache.
7:00		80	18	
				At about 8 P. M. the patient fell into a heavy sleep, from which it

MUSCULO-SPIRAL PARALYSIS (TRAUMATIC).

Time.	Dose.	Pulse.	Resp.	Remarks.
				was difficult to rouse him. This lasted the greater part of the night. The next day he complained of an exacerbated headache, but had no other symptoms.

An analysis of all the cases shows that in every one except that just detailed, the pulse rate was reduced; in No. 2, from 78 to 60; in No. 3, from 84 to 60; in No. 4, from 84 to 70; in No. 5 (hysteria), from 150 to 72; in No. 6, from 108 to 86; in No. 7, from 96 to 80, or in a second trial from 128 to 80; in No. 8, from 64 to 60.

The respirations in four cases were not distinctly affected; but in case 2 they were reduced from 24 to 18; in case 3, from 27 to 20; in case 4, from 24 to 20; in case 7, from 27 to 20. The tendency to sleep was very marked; usually the sleep during the afternoon was light and doze-like, precisely as described by Dr. Stewart, but in one or two instances it was heavy from the beginning and it was always profound the following night. There was often slight nausea, but in no case vomiting. Dryness of the throat and mouth, giddiness, flushed face and some wandering of mind during the condition of dozing seem to have been nearly universal. No action upon any of the secretions was noted, and in no case were there any unpleasant after-effects. The hypodermic injections gave no more pain than do those of morphia, the drug appearing to be free from irritant properties.

These studies of hyoscine are sufficient to show that the relations between its actions upon the lower animals and upon man are in obedience to the law which I formulated some years since, that as a nerve centre is more and more differentiated it becomes more and more susceptible to the action of drugs. Thus we find the cerebral symptoms produced by the alkaloid in the dog are much more decided than those caused in the mouse, whilst in man the cerebral effect predominates over the spinal. It is plain, however, that in man hyoscine acts as a very feeble sedative on the circulation, a more decided sedative to the spinal and respiratory nerve centres, and a dominant hypnotic upon the brain.

The case of Dr. H. A. Hutchinson, (*Alienist and Neurologist, Vol. III., p.* 539) who experimented upon himself with a quarter of a grain

of amorphous hyoscyamine, illustrates the effects to be expected from toxic doses of an impure hyoscine; the symptoms were dryness of the throat and mouth, great loss of muscular power and of co-ordinating power, until finally the doctor was scarcely able to walk; then profound, quiet coma, lasting eleven hours, and associated with entire relaxation of all the muscles. It will be seen at once that the symptoms were those of deep narcosis and spinal sedation.

The peculiar therapeutic value which this physiological study leads us to look for in hyoscine arises from the union of decided hypnotic powers with a spinal sedative influence and a very feeble depressant action on the circulation. The experiments so far indicate also freedom from disturbance of the secretions and unpleasant after-effects. The calmative influence of conium in certain cases of mania is well known, but such action appears to be indirect and due to the motor-depressant influence of the drug. From hyoscine we have reason to expect both a direct and an indirect beneficial action.

The first person to use a pure crystalline salt of hyoscine in medicine, so far as I know, was Prof. Edlessen (*Centralb. f. Med. Wissensch.*, 1881, 416), who administered it in six cases of whooping cough with advantage in three cases; in six cases of asthma always with advantage, and in two cases of severe enteralgia with relief to the pain.

Dr. Rudolf Gnauck (*Centralb. f. d. Med. Wissen.*, 1881, 801. *Charité Annallen*, 1882, 448), has used the crystalline hydriodate in a number of cases, and reports complete accord with Prof. Edlessen in finding great diversity in the susceptibility of various people to its influence.

In some cases it caused so much general distress, headache, weakness, numbness, etc., as to forbid its use. Failure of appetite, and feebleness he appears to believe the chief contraindication to its use. He gave it in twenty-eight cases of various forms of insanity with sleeplessness at night. Sleep usually came on in from one-half to one hour, and continued through the night. In four cases no good effect was achieved. In delirium tremens and dementia paralytica its influence was least happy. Given during the day in eighteen cases of great excitement and delirium it had marked effect in inducing sleep or at least calmness; the quietude continued after each dose from one to eight hours. Dr. Gnauck gave the alkaloid hypodermically in doses of from 0.0005 grm. to 0.001 grm. On account of varying susceptibilities the smaller amount should at first be employed.

I have used the hyoscine in five cases of violent mental disease:

Case I. was a lady suffering from *acute dementia*, with maniacal outbreaks. At times the restless sleeplessness was very marked Twenty-two grains of chloral with three-eighths of a grain of morphia repeated twice had no perceptible effect upon this insomnia. A $\frac{1}{100}$ grain of hyoscine was given by the mouth, and in a few moments the patient went to sleep. On four successive nights the hyoscine ($\frac{1}{100}$ gr.) produced from four to six hours of very quiet sleep, the patient, when not under its influence, continually getting out of bed, wandering aimlessly around the room, etc.

On the afternoon of June 16 date, there were numerous fine subcrepitant râles in the lungs (evidently congestion with some œdema). The $\frac{1}{100}$ grain of hyoscine was given about 9 P. M., and repeated about 2 A. M. No sleep was induced, but there was very pronounced dyspnœa, with livid flushing of the face, distress and great restlessness. The next day there was general œdema of the lungs, and the patient was supposed to be dying, but under treatment the attack subsided. After this the patient slept much in the day time, but at night wandered about in a demented delirium. Chloral and morphine again entirely failed of effect.

June 21, she was given, at 10 P. M., $\frac{1}{80}$ of a grain of hyoscine by the mouth, and at 11.15 she went to sleep; the breathing was slightly labored, the face a little flushed. The sleep was very heavy and quiet, and lasted two hours. A day or two subsequently the patient was seized with a second sudden attack of œdema of the lungs, dying in twenty-four hours. This attack, and the fact that the râles in the first attack appeared before the administration of the daily dose of hyoscine, show that the drug was not the cause of the œdema, although it, probably, by depressing the respiratory center, augmented the distress. There was also chronic interstitial nephritis.

Case II.—M. C——, aet. 25, had been in the University Hospital for several months, suffering from long-continued and violent hystero-epilepsy with rare outbreaks of mania, lasting only a few hours. During the latter part of May, not having had a fit for an unusual length of time, she became much depressed and markedly erotic.

June 6. She was suddenly seized with

most violent mania. She was in a condition of the wildest excitement, with a furious expression of face, loud, incoherent, incessant lascivious talk, and great muscular restlessness and effort. She endeavored to injure herself and others around her, jumped out of a window, and did many lewd and violent acts. Various remedies were employed, *inter alia* an ice-water bath, without effect, and finally, screaming, yelling and fighting, she was tied fast in the bed. She had no sleep that night, and the next twenty-four hours raved incessantly in spite of blistering the head and the administration of twenty grains of bromide of potassium and 10 grains of chloral every 2 hours.

June 7. She was in a very marked typhoid state without abatement of her delirious fury and erotism.

By 3 P. M., June 9, she was in an alarming condition, having since the beginning of the attack absolutely refused food, and having had no sleep. Her fury was only interrupted by long-continued spells of muttering delirium. Milk and whisky had been forced down her, but the tongue was brown and dry; the teeth covered with sordes; the voice lost in huskiness from incessant use; the pulse failing; the whole muscular system affected by repeated, irregular twitchings. A hypodermic injection of $\frac{1}{100}$ grain of hydrobromate of hyoscine was now given; in five minutes her face was flushed. She gradually became more and more quiet, talked only in a whisper, and in twenty minutes was perfectly at rest, though not sleeping. She now took her milk punch readily, and remained in this condition for about six hours, when she commenced to rave and struggle as before.

About 6 o'clock in the morning of June 10, $\frac{1}{60}$ of a grain of hydrobromate of hyoscine was given hypodermically; in ten minutes her face was flushed, five minutes later she became cyanosed—so much so that artificial respiration was deemed necessary. The drug seemed to have no action on the rapidity of the respirations, but made them more and more shallow. The muscular twitching seemed to be aggravated, which prevented the action on the pulse being noted. In a very few minutes, however, she became very quiet and easy, and so remained, though sleepless for eight hours.

At 2.30 A. M. of June 11, she was in a raging delirium. $\frac{1}{100}$ grain of hyoscine was given hypodermically, which kept her quiet until 10 A. M. She was then given another hypodermic of $\frac{1}{100}$ grain. She went to sleep and slept till 4 o'clock, then took $\frac{1}{100}$ grain by the mouth, and again slept for three hours, when she again became noisy; $\frac{1}{60}$ of a grain by the mouth then kept her quiet about five hours.

By 2 A. M., June 12, she had become again maniacal, and $\frac{1}{60}$ grain was given by the mouth; in half an hour she was again asleep and slept for four hours, then gradually grew more and more talkative until 10 A. M., when 1-90 of a grain was given by the mouth, which produced a quieting effect in 30 minutes. She remained quiet until 9 P. M., when she became slightly excited, then another $\frac{1}{60}$ of a grain was administered and she rested quietly all night. The next two days she was entirely irrational but not wild or delirious. She was then removed to an insane asylum.

Case III.—M. E. *Religious melancholia*, with maniacal excitement. Had not been in bed for several nights. One-sixth grain morph. given hypod. produced only dosing in chair. 2:20 P. M., $\frac{1}{100}$ gr. hydrobrom. hyos. hypod. Resp., 24. Pulse, 77.

3:20 P. M. R. 19. P. 69, patient quiet. 4 P. M Right face flushed; patient wants to sleep. Slept for one hour. Awoke quiet. 8 P. M. Went to bed. Slept soundly all night."

From this time forward hypodermics were repeated as required. They kept the patient quiet and produced sleep.

Case IV.—J. M., aged 75; with marked general arterial atheroma, and said to have been *insane* for many years; was admitted to my ward in the Philadelphia Hospital, in a furiously maniacal condition, requiring him to be strapped in bed.* He had not slept for 48 hours, notwithstanding the use of narcotics. I ordered hyoscine. The following report was furnished by the resident physician, Dr. G. E. Day: "He was given $\frac{1}{100}$ gr. hydrobromate of hyoscine hypodermically at 2 P. M., and in less than half an hour he quieted down and fell asleep. At 8 o'clock he was still asleep, when another $\frac{1}{100}$ gr. was given. At 12 o'clock he was still sleeping, and fearing unpleasant results, I did not give him any more. He slept until six o'clock the following morning, and then was transferred to the insane department. Neither pulse nor respirations were noticeably affected by the drug."

Case V.—*Senile dementia*, with sleepless-

* Owing to the foolish formalities of the law, several days are required to get a man into the insane department of the hospital, and in cases of violent mania, being without means of otherwise controlling patients, we are forced to treat them by strapping, until they can be transferred.

ness. I saw the lady only in consultation, and have only had the report the hyoscine at first failed, but afterwards acted most happily.

For the reports of the following cases which occurred in the Philadelphia Hospital I am indebted to Drs. Wm. L. Abbott and Geo. B. M. Free, Resident physicians, who used the drug at my suggestion:

Case VI.—M. K., *delirium tremens* with persistent wakefulness, 40 grains of chloral, 80 of bromide of potassium, and ¼ grain of morphia having entirely failed, $\frac{1}{100}$ of a grain of hyoscine was given at 7 P. M. At 8 P. M. was awake, but quieter; at 9 P. M. was asleep and snoring. Soon after this awakened, but seemed comparatively rational; complained of giddiness. During the rest of the night, was awake and delirious. The next day was quiet and had no return of delirium at night.

Case VII.—G.C., aged 40, *delirium tremens*. Received at 6 P. M., and again at 8 P. M. a hypodermic injection of $\frac{1}{100}$ of a grain of the alkaloid; no effect was produced upon the restless, talkative delirium, the pulse and respiration-rate being respectively reduced 15, and 2 per minute.

Case VIII.—M. K., *senile dementia*, with almost complete insomnia. A mixture containing 60 grains of the bromide of potassium, 20 grains of chloral, and ¼ grain of morphia given at bed time having failed entirely of effect, on the three successive nights $\frac{1}{100}$ grain of hyoscine caused from 4 to 5 hours sleep, with reduction in the pulse and respiration rate.

Case IX.—J. M., *maniacal dementia*, without sleep for four nights; patient so furious at night that he had to be strapped in bed. During each of these nights he had received 40 grains of chloral, 180 grains of the bromide of potassium and ¼ grain of morphia, without effect.

Administered at 3:10 P. M. $\frac{1}{100}$ grain hyoscine hypodermically. Patient went to sleep in about ten minutes, and did not wake up until after midnight, then took a drink of milk and slept until morning. Before administration, 3:10 P. M., pulse was 81, respirations, 20; 3:30 P. M., pulse, 100, respirations, 15; 4 P. M., pulse, 88, respirations, 16; 5:30 P. M., pulse, 74, respirations 13. Next day he was in the same condition as usual, that is, wandering around in a demented condition. In the evening administered the same dose hypodermically. Before administration, 6:45 P.M., pulse was 84, respiration 18; 7:25 P.M., pulse 96, respiration 13; 10:50 P.M., pulse 85, respiration 17. The patient went to sleep as before, and remained quiet all night, respiring somewhat jerky; patient sleeping uneasily, twitching and jerking the limbs.

The clinical results which so far I have had with this drug in cases other than maniacal, are very meagre, but so far as they go are correspondent with physiological results, which indicate little value for the relief of pain, but much for the removal of spasm.

In one case of violent facial neuralgia of paroxysmal type, $\frac{1}{100}$ grain was given hypodermically, at my instance, by Dr. Farnham, at that time my resident physician in the Philadelphia Hospital. In a short time the patient complained of giddiness, numbness in the legs and arms, and staggering on attempt to walk. This was followed by vomiting, the pain continuing without abatement for an hour or more, when a hypodermic injection of morphia was administered. The vomiting may or may not have been due to the hyoscine, as the patient sometimes vomited spontaneously in her attacks.

DELIRIUM TREMENS AND ITS TREATMENT.

By E. P. Hurd, M. D., Newburyport, Mass.

In an article published in the Therapeutic Gazette, August, 1884, entitled, "On the Importance of Using Pure Liquors in Medicine; the Adulterations of Liquors," etc., it was clearly shown by considerations based on the experiments of two eminent French physiologists, as well as on the study of alcoholism among various nations, that many of the worst evils of intemperance are due to impregnation of the spirituous drinks in ordinary use, by some of the higher atomic alcohols, and especially fusel oil. It is rendered probable by some striking facts adduced by Dr. B. W. Richardson, in the *Medical Times and Gazette*,* that delirium tremens owes its origin to a special irritation produced in the nerve centres by the combination with ethyl alcohol in the liquors largely distributed for consumption, of these heavier kinds of spirits, which are known to be the cause "of the continued coldness, lassitude and depression which follow the well-known dinner with bad wine."

Certain it is, that delirium tremens is almost, if not quite, unknown among nations whose only alcoholic beverage is the pure juice of

* Medical Times and Gazette, Dec. 18, 1869, p. 706.

the grape. I am not sure that antiquity makes any positive mention of the disease, although Ball cites Hippocrates as alluding to it, and Aristotle's account of a long carousal of Dionysius, of Syracuse, ending in an attack very much resembling the "horrors of the modern inebriate."* It is, however, a fact that this disease, though without doubt familiar to physicians ever since distilled liquors first came into use, did not take its place in medical nosology till Sutton, in 1813, wrote his lucid and accurate description, and gave to this special form of mania the name which it now bears, delirium tremens.

Essential Character and Symptoms.—Delirium tremens was formerly regarded as a form of cerebral erethism, characterized by exhaustion of the nervous and muscular functions, resulting from the suspension of the accustomed alcoholic stimulus. On this view (ably defended by Cumming, Jaccoud and Wood), therapeutic indications were founded. This theory, in the light of more exact pathogenic data, is hardly tenable, and facts bear out the assertion that *mania apotu* is a form of alcoholic paralysis, analogous to the *tremblement mercuriel* of the French pathologists, due to saturation of the nerve cells of the cerebral cortex with the poison, and consequent enfeeblement and perversion of the sensory, perceptive and motor functions. The affection, in other words, is the result of the cumulative effects of a toxic agent already in the system, not to a sudden withdrawal of the poison.† I shall not dwell on the symptoms of delirium tremens, which are familiar to every practitioner. It is generally ushered in by prodromes, such as restlessness, anxiety, malaise, insomnia, all indications of the suffering state of the nerve centres; there is want of appetite for food and strong drink, and generally for some days abandonment of drinking habits, consequent on the gastric irritability and catarrh brought on by the alcoholic abuses. Abstinence from food increases the ataxia of the cerebro-spinal system; the general malnutrition is profound. An abortive attack may follow; the symptoms falling short of a well-developed form of delirium tremens. These have been well described by Dr. Seller.‡ Such cases, he says, are often "alarming as presenting all the symptoms usually premonitory of the perfect disease, while their progress only stops short of what might be regarded as the essential characteristic of an attack of delirium tremens, namely, a delusion, or succession of delusions, commanding belief and leading to action. * * * "There may be more or less change in the patient's ordinary bearing; there may be alteration of the voice; there may be a sudden starting in the midst of a sentence, and a fixing of the attention on something at a distance in the room; there may be even tremors of the hands, tremors and startings of the lower extremities, and a tremulous tongue, while such alarming symptoms may have been preceded by sleepless nights, and uneasy dreams, with a momentary belief in the reality of these dreams when the patient

* Ball—Maladies Mentales, p. 623.

† This view is substantially the same as that advocated by Dr. Wilks, of Guy's hospital, although he supposes some mental or physical shock, or additional excitation, plus the continued over-stimulation, to be a necessary pathological factor.

"My own idea is that the brain has been previously brought into an impoverished state by continued debauchery, and that thus weakened, it is ready to be further disturbed by any fresh excitant, whether this be a mental trouble, an accident, or more probably, an extra amount of the alcoholic stimulus. * * * The cause may be an accident or an acute disease suddenly set up, but we generally find that the patient has been out with his friends, drinking for two or three days in succession, and if he has had any trouble in business, this would only be a still further excitant cause. On the other hand, I never hear of a man suffering from delirium tremens from having got drunk only once, nor do I hear of it in the habitual drunkard from having left off the accustomed stimulus. * * * I have myself, on several occasions, recommended or insisted on the withdrawal of ale, wine and spirits from those who had been endeavoring to live on these stimulants, but never witnessed anything like delirium tremens result."

I have elsewhere expressed myself thus as to the matter of pathogeny (Boston Medical and Surgical Journal, Vol. CXII., page 20): "The man who is in a state of preparedness for delirium tremens is one whose nervous system is in a highly irritable, unstable condition from strong drink; he has for some time been unable to eat or digest, and has become further weakened in consequence; the time, moreover, has arrived when, owing to the saturation of the system with the poison so that it will bear no more, he can take no more alcohol, and this is the last blow that brings him down. The issue may be precipitated by a traumatism, as a severe injury to the head or a fracture, by its prostrating influence upsetting the nervous equilibrium even more than taking from the system the prop of alcohol could do. An attack of pneumonia, erysipelas, acute rheumatism, even severe mental emotion from business losses, disappointment, etc., any great physical or mental shock, may be the immediate antecedent, just as the snapping of the gun-lock causes explosion of the powder in the barrel."

‡ Edinburgh Medical Journal, November, 1863, page 389. Braithwaite's Retrospect, Part XLIX., page 38.

wakes. * * * The abortive case may continue for a number of days, the patient sleeping heavily in the intervals, and awaking to long fits of restlessness, all the while being averse to being left alone, and troubled with sudden severe attacks of vomiting, yet at length he begins to obtain refreshing sleep and gradually gets well."

Seller considers cases of this kind as "threatenings" of delirium tremens, but destitute of the delusions; certain it is that they are common enough in the clinical experience of all physicians, and the same patient may have one or more menaces of this sort before he has a well-marked attack. The typical form is characterized by aggravation of all the phenomena above described as appertaining to abortive cases, plus the frightful hallucinations and a fixed belief in their reality. The tremulousness of the voluntary muscles, the tongue, the members; the vain attempts of the inebriate to escape his pursuing spectre, which generally takes on the form of vermin, reptiles, or the most grotesque and unnatural objects; the haggard, distressful expression of the patient who can obtain no sleep or rest, and whose languishing organic functions testify to the oppression of the nervous and vital forces—all constitute a pathological syndrome of symptoms, which are peculiar to the disease in question, and cannot well be misinterpreted.

Diagnosis.—It must be borne in mind that the principal phenomena may supervene upon other causes, as starvation, fever poisons in the blood, wounds, saturnism, etc., which produce a nervo-muscular depression similar to that attendant on alcoholism, but the congeries and mode of association of the symptoms, and the history enable the practitioner easily to make a diagnosis. Malarial fever with delirious manifestations, meningitis and certain acute deliriums resemble delirium tremens only by a few isolated symptoms. Uræmia is distinguished by the continued vomiting, the absence of hallucinations, the coma albuminuria, etc. In cerebro-spinal saturnism, the delirium is extremely mobile, the muscular tremors are less manifest, and periods of depression and somnolence follow phases of excitation. In acute mania there is not the ataxia of movement, the trembling, the sudden terrors which distinguish delirium tremens, and the ideas are incoherent, lack association and are not the direct outcome of the hallucinations. An important point of diagnosis is to differentiate delirium tremens from the symptomatic delirious attacks which accompany febrile affections, but in these cases you have not the peculiar loquacity, the agitation of movements, the tremulousness, the hallucinations, the vision of small animals, the persistent insomnia, which characterise delirium tremens.*

EVOLUTION, PROGNOSIS.

More than fifty years ago Dr. Ware, of Boston, in the American Medical and Surgical Journal, showed that delirium tremens, simple and uncomplicated, undergoes a natural evolution in the course of three or four days, ending in quiet sleep and recovery. In my own experience, if by medical treatment refreshing sleep can be procured during the first twenty-four hours, the subsequent course of the disease is much milder than if treated on the purely expectant plan, of which Dr. Ware was the first advocate.† There is a febrile form mentioned by Lasègue and Magnan, in which the prognosis is more grave, and this is also true of delirium tremens occurring in broken down constitutions in old people, or when complicated with pneumonia, cerebral inflammation, or traumatism. Death, when it takes place, generally results from debility, exhaustion or convulsions. Ball estimates the mortality from delirium tremens at 15 per cent.‡

PATHOLOGICAL ANATOMY.

It cannot be said that the autopsy furnishes any lesions positively characteristic of this disease. What you do undoubtedly find are the effects of prolonged alcoholic poisoning on the various organs and tissues; the membranes of the brain are congested and thickened; the convolutions more or less shrunken; there is some œdema of the pia mater, and there may be adhesions of the meninges to the cortex; these are, however, marks of meningitis or cerebritis common to alcoholism. Nor can it be affirmed that dissection sheds any light on the affection. Like ordinary insanity, delirium tremens must be regarded as rather of a functional nature than as dependent on any gross anatomical changes.¶

*Jaccoud Traité de Pathologie Interne, Supplement, page 377.

† Am. Jour. Med. Sc., Nov., 1831.

‡ Leçons Sur les Maladies Mentales, p. 633.

¶The perfect recovery that often follows reform from drinking abuses, testifies to the frequently functional nature of the malady.

The long suffering of the stomach under abuse by alcohol, and the ready restoration which follows total abstinence, are facts of common observation. I

TREATMENT.

When I commenced the practice of medicine, the dominant therapeutical doctrine was that first enunciated by Pearson in 1801, and afterwards ably defended by Coates, that "sleep is the *sinè qua non* in delirium tremens, and opium the only remedy." This should be given in sufficient doses and often enough to produce sleep. Immense doses were sometimes required to accomplish this result. Coates taught that there was no limit to the exhibition of this narcotic, which should be pushed boldly till sleep ensued. In one obstinate case he gave six grains an hour till forty-five grains were taken, before quietude was obtained. It was generally believed that if sound sleep could be procured, all danger was at an end.* Although Carter, in 1830, and afterward Ware and Gerhard brought a reaction against such heroic treatment as Coates advised, opium continued to be the sheet anchor in delirium tremens, given, however, in more moderate doses and with more prudence; combined sometimes in sthenic cases with tartar emetic, and in asthenic cases with alcohol. It was especially under the dominance of the belief that *mania a potu* was due to suspension of the stimulus, that alcohol in moderate stimulant doses was prescribed, and we see at the present day such eminent authorities as Jaccoud recommending the opiate treatment along with three to four ounces a day of alcohol, in the form of whisky or brandy.†

There is no doubt that death sometimes resulted from the immense doses of opium given in the earlier years of the narcotic treatment (*vide* Carter, *loc. cit.*, for instances). At the same time it must be confessed that it is not an easy matter to produce fatal coma by opium in a patient affected with delirium tremens. Absorption from the alimentary canal is performed with little activity; and nervous matter, when under the influence of one poison, is very slow to come under the control of another. Of this I had a good instance in a former patient of mine, N. B., of Danville, Canada, in 1867. When I was called to see this man, he had been three days without sleep, and was very wild and restless, the victim of a hallucination that an enemy, a fierce-looking little Jew, was in various places and postures pointing a pistol at his head in order to shoot him. In terror he would leap from his chair and hide under the bed, in a closet, behind a companion—anywhere for protection. Dr. B., a retired practitioner, was living in the house where the delirious man was temporarily stopping, and before my arrival, had given him, in divided doses during the evening, five grains of morphia by mouth. I inserted one grain more under the skin, and in an hour had the satisfaction of seeing Mr. B. fast asleep. He slept six hours and awoke as delirious as ever. This has ever been, in my experience, a peculiarity of the opium treatment, that the patient awakes from his narcotic sleep little, if at all, restored, and is again a prey to his insane fears and delusions. When I made my morning visit—it was a bitter cold day in January—I was told that my patient had escaped from the house, and had been found shortly afterwards in a neighboring field, suffering severely from the cold. In fact both hands were frozen to the wrists, necessitating in a few days amputation, an operation which Mr. B., owing to debilitation, did not survive.

The advantage of the hypodermic method of administering the opiate was seen in the above case, one grain given subcutaneously having quite a speedy effect, while five grains had previously been taken by the mouth without any perceptible abatement of the symptoms. These advantages were many years ago pointed out by Freeman and Barclay: "the patient will not swallow, the subcutaneous injection obviates the difficulty; the stomach will not absorb the opium, the morphine put under the skin is absorbed in five minutes. Time is lost by the stomachic dose, it is gained by the hypodermic; uncertainty attends the one plan, certainty the other. Dr. Robert Ferguson counted twenty-four one-grain opium pills in the stomach of a patient who had died in an insane hospital. Unabsorbed, those pills can have done no good, but rather harm, embarrassing the practitioner. *

have especially in mind the case of J. B., the most hopeless inebriate I have ever known. After five attacks of delirium tremens, and a year of chronic alcoholism *in which drunkard's gastritis was marked and constant*, he gave up his ruinous habit, and so far the reform has been permanent. His digestive functions seem to be completely restored, and he is doing good and efficient work in his profession.

*Coates, North Am. Med. Jour., Vol. iv., p. 314; Carter, Am. Jour. Med. Sciences, Vol. vi., 1830, p. 328.

†"My treatment is always alcoholic. When a quantity of spirits, proportioned to the intensity of the symptoms (say three or four ounces a day) does not bring quietude in the course of twenty-four hours, I add to each alcoholic potion 25 to 50 drops of laudanum."

Jaccoud, Pathologie Interne, 1876. Article—*Alcoholism, delirium tremens.*

* * Moreover, by the hypodermic plan the necessity for restraint is done away with."*

There is no doubt that the judicious hypodermic use of morphia in delirium tremens, (solid opium ought to be proscribed, for reasons above given) does tend, by calming the cerebral erethism, to moderate the severity and shorten the duration of the attack, and there are very few well-marked cases where we can afford to get along without this potent remedy. In fact, while I have for many years been continually seeing all forms of this disease—mild and grave, and abortive cases—in private practice, at the police station, in the alms house (where inebriates are often sentenced), I do not remember an instance where I have not begun treatment with a subcutaneous injection of half a grain of morphia, and several such injections have generally been needed—in conjunction with chloral and other remedies—during the course of the disease.

It seems to me that the antimonial (emetic and depressant) treatment so earnestly advocated by Dr. Peddie in his remarkable treatise,† has little *raison d' être* in the light of recent and more rational views as to the pathogeny of this affection, and I am not aware of any medical authorities, any hospital or infirmary at the present day, that employ or sanction this ancient therapeutic method. It is possible, however, that in some cases an emetic at the onset of the attack (and here ipecacuanha should clearly have the preference) may have a beneficial effect in clearing the *primæ viæ* of foul ingesta and mucosities, and favorably modifying the gastric catarrh, thus preparing the patient for the reception of nourishment.

What are the indications of treatment in delirium tremens?

We have depression of the organic functions, and an enfeebled, exhausted condition of the nerve centres; the cells of the gray matter of the brain are, moreover, under the influence of a poison whose expression is an erethism determining constant irregular discharges of nerve force while denying repose. There is more or less gastric irritability and catarrh; a languid systemic circulation; the blood vessels of the pia mater are engorged. The leading indications then are: First, to promote elimination of the toxic agent. This indication, however, must be kept in abeyance for a time by the second, which is the most urgent, for the rapid expenditure of nerve force threatens to wear out the patient. The second indication is to calm the excited brain and stop the destructive waste going on in the nerve centres till reparation shall be fairly instituted. This should be accomplished by some medicament that will have the minimum of congestioning action, while suspending cerebral activity in a manner analogous to natural sleep, "tired nature's sweet restorer." Thirdly, the system should be supported by suitable nutrients and stimulants. I believe that we have in capsicum the typical stimulant, in chloral the typical hypnotic, and in beef-peptones, the typical nutrient in delirium tremens. The latter should be given in the form of broth or beef-tea continuously during the attack, and to the extent of the tolerance of the stomach.

Capsicum was first recommended by Dr. Kinnear, of Portsmouth, England; scruple boluses to be given every two or three hours. Dr. Lyons, of Richmond Hospital, Dublin, also early wrote in favor of this method of treatment, having had remarkable success with its employment.* Patients in less than an hour after swallowing the bolus of a scruple or half a drachm of cayenne pepper, would fall into a quiet sleep, from which in three or four hours they would awake, "calm, conscious and convalescent." In the records of the Melville Hospital, not less than 70 to 80 cases are reported to have been successfully treated by the sole use of this drug in single or repeated doses, ranging from one scruple upwards. No gastric disturbance or unpleasant symptom was at any time noticed. As a stimulant of great and immediate efficacy Dr. Lyons thinks that its action may be explained "by the direct influence it exerts upon the gastric expansions of the vagi, and so indirectly upon the cerebro-spinal centres."

My own experience with capsicum in this disease has been in connection with its employment in combination with chloral or with bromide, and in the form of the tincture, in twenty-drop doses. Its sustaining influence on the nervous centres seems to be marked; the trembling and the subjective symptoms (malaise, dread), are mitigated; and if chloral has any depressant effect on the heart this is opposed, and the sleep that follows is counteracted by the capsicum.

Chloral is the hypnotic *par excellence*, the most valuable of all the medicinal resources by which we combat this distressing disease.

*Braithwaite's Retrospect, part 52, page 72.
†Edinb. Month. Jour., June, 1854, p 506, etc.

*Braithwaite's Retros., part LIV., p. 70.

If it may be said that the introduction of bromide of potassium into medical practice "ushered in a new era in the treatment of delirium tremens,"* cutting short the disease, and favoring a speedy convalescence, it may also be said that the action of bromide was relatively slow, and dependent on the repeated administration of large doses—half a drachm or more every hour—and that the effect on the spinal cord of massive doses was likely to be somewhat depressing; that, therefore, the subsequent substitution of hydrate of chloral for bromide of potassium has been an improvement on every former method of treatment, enabling the physician to avail himself of a remedy which, in the words of Balfour "in all cases, from the slightest to the most severe, acts rapidly, safely and efficaciously, *cito, tuto et jucunde*, and which seems to deprive indulgence in drink of all its horrors and nearly all its dangers."

As to the mode of action of chloral in staying the wasting excitement of *mania a potu*, we have no very positive data. It undoubtedly acts directly on the anatomical elements of the nerve centres, producing possibly a temporary coagulation, and arresting change; it certainly stops activity and allays sensibility. Chloral is generally believed to diminish the amount of blood circulating in the intra-cranial vessels; if it does this, as seems probable from clinical experience on its effects in acute cerebral affections, as well as from the well-known experiments of Dr. Hammond and Claude Bernard,† this result may be attributed to its undoubted property of lowering blood pressure by lessening cardiac and arterial tonus, as well as its power of moderating the attraction exercised on the blood current of the intra-cranial circulation by the cells of the cortex. According to Vulpian‡ its influence on the vaso motors of the pia mater is practically nil; this, however, does not militate against the evidence from clinical experience and experimental observation that the brain of a chloralized subject is in a relatively anæmic condition. The former kind of evidence is, it is true, of a deductive kind, and may be expressed in the proposition that chloral allays the excitement which produces the congestion, and under its use the manifestations of cerebral hyperæmia vanish. With regard to the experimental observations of Hammond and Bernard, these seem to be conclusive in proving that chloral in moderate (not *enormous*) doses produces anæmia rather than congestion of the encephalic vessels.

The same would seem to be the conclusion with regard to opium when taken in medium doses, as has been shown by Stillé, Hanfield Jones and Hammond, and here the experiments of the latter are of a positive nature, like those respecting the *modus operandi* of chloral. Opium is not, however, so manageable a medicine as chloral, and any excess in its administration is sure to be followed by paralytic congestion; so impressed, in fact, was Gubler with the hyperæmic effects of this medicament that he declares that "all the phenomena attending its use are phenomena of congestion, and opium seems to produce in the entire organism what section of the cervical sympathetic cord produces in the face."* That opium is more potent in allaying every painful consciousness than any other remedy is a matter of experience, and this makes it especially valuable in delirium tremens. For this end it may be used to advantage as an auxiliary to hydrate of chloral which certainly has proved itself to be the better hypnotic, producing sleep the most like the sleep of health, and the most refreshing. The employment of hypodermic injections of a little morphia at the onset, and occasionally during the progress of this disease (great judgment being required as to how much and how often) does certainly help powerfully to subdue the restlessness and delirium, and renders a less quantity of chloral necessary. The past few years I have certainly seen more abortive cases of this disease, and cases speedily remedied, than before I first resorted to the

* Clinical Lectures on the Treatment of Delirium Tremens, by Dr. George Balfour. London Lancet, 1879, (Am. Reprint, page 203.)

†In chloralized animals Hammond, in a remarkable series of observations, noticed during the period of sleep, pallor of the meninges and a shrunken appearance of the convolutions. This corresponds with the observations of Durham and others respecting the intra-cranial circulation during natural sleep in hares whose craniums were trephined, in human subjects who had lost by traumatism a portion of their skull, etc. Always there was marked anæmia of the surface of the brain.

Claude Bernard verified the experiments of Hammond (Vide his Leçons sur les anæsthetiques, Paris, 1875.)

‡Vulpian, Leçons sur l' Appareil Vaso-Moteur, t. I, p. 163. "Il n' y a eu sous l' influence du chloral ancune modification appréciable des vaisseaux de la pie mère, et de la couche grise des hemispheres cerebraux.

*Gubler—Jour. de Thér., 1877. Commentaire's du Codex—Art. Opium.

medicinal treatment which I now pursue, viz., a subcutaneous injection of one-half grain of morphia at the inception of the attack, followed by a tablespoonful of the following mixture, which I advise to be repeated every two hours till sleep is induced:

℞ Chloral Hyd., ℥ ss.
Tinc. Capsici, ℥ ss.
Peppermint Water, ℥ vss.
M.

The quantity of chloral which may be taken with impunity in this disease is considerable, in fact massive doses are required. When the nervous system has undergone a profound modification under the influence of one toxic agent, it does not readily respond to another; this is a lesson, as before said, of which we see repeated illustrations. My friend and confrere, Dr. J. J. Healy, knew half an ounce of chloral to be taken in the course of twenty-four hours by a patient in delirium tremens, who made a good recovery; and my occasional patient, P. L., once took two drachms at one dose—all that I had left him for the day—yet his sleep was not unusually sound or long, and I was obliged to administer a hypodermic of morphia in the morning.

In some cases of unusual violence I have been obliged to resort to the use of chloroform by inhalation, and where the attack was ushered in by epileptiform convulsions, or where convulsions constituted an epiphenomenon of the disease. Such was the case with Leander G——, of this city, in 1873. When I was called to attend him he had been on a spree of a week's duration, and had drunk an excessive quantity of new rum. Rum fresh from the distillery* is the favorite beverage of all our shaky inebriates, and the great causal factor in every case of the "horrors" that has ever come under my observation. I found this patient writhing under a succession of fits, one immediately following another, (status epilepticus); there was lividity of the countenance, a weak rapid pulse, and the body was bathed in clammy perspiration. I immediately put him under chloroform, which in an hour or two stopped the convulsions. As soon as he came sufficiently to himself, I gave him thirty grains of chloral in an ounce of peppermint water, which was followed by a quiet sleep from which he awoke in the morning prostrate, restless, and complaining of muscular soreness, with the delusion that the room was full of horrible bats, flitting all about him, and seeking to pounce upon him and devour him. He implored the family to cover him with heavy bed-clothes and protect him from his hobgoblin foes. Full doses of chloral and capsicum kept him quiet and asleep the most of the day, and strong beef-tea was freely administered; in the evening he was much better and in his right mind. This young man made a good recovery from this attack, to succumb to another similar attack the year following, which was also ushered in by a series of fits, in one of which he died.

The internal use of chloroform, in drachm doses frequently repeated, a mode of treatment formerly recommended, is hardly called for or justifiable at the present day, when we have a much more manageable, efficient and certain remedy in chloral hydrate.*

With regard to the treatment of delirium tremens by large doses of digitalis, first recommended by the late Dr. Pierson, of Massachusetts, and afterwards by Dr. Cross, of Wurtemburg, and Dr. G. M. Jones, of England, (the latter advising even half-ounce doses of the tincture), I have no experience, and do not understand the principles on which it can be beneficial.

ELIMINATIVE TREATMENT.

This kind of treatment, once supposed to be of prime importance, is now acknowleged to claim only a secondary place in the therapeutics of delirium tremens. It is plain, from the nature of the case, that but little can be done to hurry the elimination of alcohol from the system. If you stop the introduction of more alcohol into the blood and protect the organism from the dire effects of that which is already there, elimination will go on with sufficient rapidity; certain it is that besides the proper attention to the bowels, which are almost always constipated and require laxatives, little can be done to favor excretion. There has been a marked decline in the mortality of this disease, as the statistics of numerous hospitals show, since more rational modes of treatment have been substituted for the heroic evacuative measures recommended in former times, and which consisted in emetics, afterwards mild cathartics (Epsom salts and magnesia) and warm baths; this first and fore-

* This kind of spirit contains much fusel oil, which, when liquors become mellow from age, by some as yet unexplained process, disappears wholly or in part.

*Vide McDowell on the use of chloroform in delirium tremens (Braithwaite's Retrospect, part XXX, 1855, page 40. Also Taffnell in Braithwaite, part XXI, page 70).

most, afterwards anodynes "graduated in force or repetition by the amount or persistence of nervous disturbance;" the antimonial preparation, first given for emetic purposes, was often continued all through the attack in nauseant doses "for a sedative effect," and to "hasten resolution."*

NUTRIENT AND SUPPORTING TREATMENT.

The best means of promoting elimination of alcohol and other noxious effete matters in the blood of a patient who is a victim of this disease, is to give plenty of nourishing food. This doctrine, first distinctly enunciated by Dr. Ware, has been inculcated by the leading medical authorities, notably Balfour, Laycock, Peddie, Bennett, Dunglison, Blake, Bartholow, ever since. It is well enough to encourage free action of the skin by giving stimulant diaphoretics—where at least there is deficiency or arrest of the cutaneous exhalation; to stimulate the kidneys by saline diuretics, and the hepatic secretory functions by podophyllin and calomel; it is certainly of more importance to support the system by meat broths and milk, which also arouse the emunctories and prove excellent depurants. With regard to milk, it is a valuable nutrient when well borne, and may be taken freely all through the attack, no other food being needed. Common experience, however, I think, testifies to the superiority of meat broths in the majority of cases, these being more likely to agree with the stomach and being more assimilable. Of the various protein preparations there is one which commends itself for its nutritive excellence and easy digestibility; I have before alluded to it; it is a dried powder of beef known as *beef peptones* (sarco-peptones), and *peptonized beef*. A dessert spoonful of this powder may be stirred into a cupful of hot water or milk, and the whole taken at one draught, or as much as the condition of the stomach will tolerate. Or strong beef tea-made from lean beef may be given instead; a gill every two hours. Johnston's fluid beef has been a useful preparation in my practice; it is a handy article of diet in the sick room, and seems to be both more palatable and more nourishing than most of the meat extracts. Theoretically, desiccated blood, as manufactured by Parke, Davis & Co., would seem to be a most useful alimentary product in delirium tremens where a powerful and easily assimilable nutrient is demanded.

GENERAL RULES OF TREATMENT.

The general rules of treatment have been well summed up by Laycock:*

1. The patient should be placed in as complete a state of muscular repose as possible; for muscular activity exhausts the nervous system. Should his delirium be of a violent kind, chloroform would be a better and safer remedy than the strait-jacket.

2. All sensational stimuli should be removed, and all emotions as far as possible prevented.

3. Food of a suitable kind should be carefully given from time to time, no alcoholic stimuli of any kind being administered, unless specially indicated.

4. When there is a tendency to diaphoresis it should be encouraged as an eliminatory process.

5. The surface, and especially the feet, should be kept comfortably warm.

6. An experienced nurse should attend the patient.

To these rules we should add, as medicinal measures, the judicious administration of morphia hypodermically, and the capsicum and chloral combination before mentioned, which are, I am persuaded, the best means of combating the restless, sleepless irritability whose persistency renders this disease so formidable and dangerous.

*See the article of Dr. Wright, physician to the Baltimore Alms House Infirmary, entitled "Observations on the treatment of delirium tremens, and on the use of the warm bath in that disease;" American Journal of the Medical Sciences, 1830, page 17. Dr. Wright's favorable experience with the warm bath meets the approbation of Dr. Armstrong who, in another paper, besides the use of the warm bath recommends affusions of warm salt water and calomel to "equalize the circulation and remove congestions;" "two or three grains to be given every six hours with a grain and a half of opium." It should be remarked that the warm bath was resorted to not so much with a view to a diaphoretic action, as a sedative effect; "to calm the tumultuous brain and prepare the system for the operation of opium."

*Braithwaite's Retrospect, part XXVIII, p. 42.

NOTE ON THE USE OF SALVIA OFFICINALIS IN CATARRHAL RHINITIS.

By Prof. D. Hayes Agnew,

IN a case of chronic catarrhal rhinitis, accompanied by profuse purulent discharges mingled with dark scales, and in which the integument covering the nose and the adjoining sides of the face were red and

swollen, after exhausting in vain every known remedy, the disease yielded to douches of sage tea. The patient, who was a married lady, had suffered from the disease for over four months. In cases of ordinary nasal catarrh, an affection at present exceedingly common in the northern portions of the country, when uncomplicated by the usual post-nasal hypertrophy of tissue, infusions of Salvia prove very comforting washes.

AN OVER-DOSE OF CANNABIS INDICA.

By H. Smyth Williams, M. D., State Centre, Ia.

THE physiological effects of cannabis indica would appear to be just at present a topic for discussion in the journals, and having had a personal experience with the drug that developed some symptoms I have never seen recorded, it occurs to me that my case may afford some interest.

I was experimenting upon myself with a view to testing the merits of cannabis in a neuralgia, of a not very severe but tolerably persistent nature, located in the left musculo-spiral nerve. Doses of 20 gtt. of the fluid extract had failed to produce any appreciable effect, and my confidence in the potency of that particular preparation had about vanished. Accordingly I decided to rapidly increase the dose, beginning with half a drachm. The graduate in which the medicine was somewhat hurriedly and carelessly poured, was a rather large flat-bottomed one, and portions of former doses had left a slight accumulation of the drug about the bottom, obscuring the lower markings. The dose was, furthermore, taken just at dusk, and a later examination of the graduate showed that, in all probability, a drachm and a half instead of a half drachm, had been taken. This was just before a six o'clock dinner.

I am conscious of having made, toward the close of the meal, one or two somewhat sarcastic remarks, which, I believe, would not have been uttered but for the effects of the drug, but which, of course, were not at the time attributed to any such source.

I repaired to my room after dinner, and forthwith began studying, the circumstance of taking the cannabis entirely escaping my memory. Presently it seemed to me that I saw the type before me with a singular indistinctness. It was scarcely blurred, yet peculiarly unsteady, as if moving about on the page. Glancing around, I saw that the entire room seemed filled with a dusky mist. My head appeared to me to be floating buoyantly in air, as if severed from its connections and unaffected by gravitation. Then it seemed to me that my heart was beating with unwonted frequency and force, and, taking out my watch, I attempted to count the pulse. For a time, such was my vacillating state of mind, that I did not succeed; but finally summoning all my energies, I was able to ascertain that it made thirty beats in a quarter. I could hear and feel it jumping against the ribs like an uneasy prisoner, and now, for the first time, I thought of the cannabis.

At first I was rather pleased than otherwise to feel that I was experiencing the hallucinations of the haschisch-eater; but in a few minutes the misty, uncertain vision passed away, and my mind resumed its normal degree of clearness. But the cardiac symptoms steadily increased. Faster and faster was the heart-beat, though, perhaps, less forcible, and I now had no difficulty in counting it. Soon it reached one hundred and fifty, and I began to wonder when it would stop. I did not feel alarmed, knowing that no active toxic properties were attributed to cannabis, yet I felt that the drug affected me very peculiarly. Furthermore, I began to experience a sense of oppression and uneasiness, and, having called my room-mate—likewise a student—I lay down. My friend attempted to count my pulse, but found only a small, firm thread. The heart by this time was running so rapidly as to defy enumeration of its beats. My own sensations were such as I shall not soon forget. It seemed to me that my heart was a compressed and bloodless organ vibrating with fearful rapidity, much as a rag flutters in the breeze, and ready at any moment to cease its vibration. I have said that my mind became perfectly clear, and it so continued. I kept a finger on the temporal artery to note any change in its size, realized fully my condition, saw that my friend was frightened and felt that he had good cause to be so, yet, possibly as an effect of the drug, I was absolutely calm. It occurred to me that all of the medicine might not yet be absorbed, so I readily, with the finger, produced emesis. I then suggested a dose of digitalis. My friend wished to add veratrum. I questioned the advisability of so doing, but finally acquiesced and took both.

For a time there was no change, but gradually the antidotes appeared to assert themselves. Another physician had been summoned, but the heart's action was materially lessened before he arrived. He seemed

perplexed by the symptoms, and suggested nothing further, except a cold application to the epicardium. This, for a time, seemed to be of some service, but again the heart's action was accelerated, and another dose of digitalis was resorted to. This had the desired effect, gradually bringing the heart's action within reasonable bounds.

The cannabis was taken, as before stated, at about 6 P. M.; hallucinations were first noticed as such in about three-quarters of an hour, and lasted only about thirty minutes. The accelerated cardiac action reached its climax at about eight, when antidotes were administered as recorded. By nine the pulse had become less firm, fuller, and easily appreciable at the wrist, numbering only one hundred and thirty. About an hour later I fell asleep, and did not awaken until morning, when I arose, feeling well, but very weak. My heart resumed its normal action gradually during the two or three days following.

Having merely recited the symptoms as they occurred, without particular comment, I ought, perhaps, to add that my heart is not altogether normal, having a mitral lesion and consequent regurgitation. Hypertrophy and a normal frequency of about ninety beats per minute have rendered compensation perfect. These facts may account for the peculiar concentration of effect upon the heart, but the mild and transitory nature of the hallucinations remains unexplained.

NOTES ON THE EFFECTS OF VERY POWERFUL ELECTRIC CURRENTS.

By Dr. G. F. De Schweinitz.

THE following report is intended to briefly place upon record the history and symptoms of two men who were prostrated by excessive charges of electricity, received from the apparatus at present in vogue for electrical illumination by means of the arc light. The first case occurred in a man, aged about 24 years, who was admitted to Prof. H. C. Wood's wards, in the University Hospital, shortly after the accident, which happened as follows: This workman was walking through one of the departments of a large car manufactory in this city, carrying over his right shoulder a long iron bar, which also rested lightly against the side of his head. The upper end of this implement became entangled in the wires connecting the dynamo with the carbons, thus placing the man within the circuit, when, to use the expression of his comrades who witnessed the result, he was felled to the ground "as if struck by lightning." His fellow-workmen hurried to his assistance, found him entirely unconscious, and, having conveyed him to a neighboring room, sent a request for his admission to the hospital. When the reporter of these notes arrived, about a half an hour after the accident, he found the patient perfectly insensible and oblivious to all external impressions, face and skin surface natural, pupil normal and sensitive, pulse full, and rather slow, respirations somewhat labored, rather deep and the rate below normal, being 10 or 12 per minute. The coma, pulse, respiration were not unlike the beginning of the second stage of opium narcosis. No attempt at restoration was immediately made, but he was conveyed to the hospital and taken in charge by Dr. W. W. Jaggard, the then medical interne of that institution. After being sharply shaken and shouted at a few times, he slowly opened his eyes, his face assumed a bewildered expression, and he answered questions in a dazed sort of a manner. His temperature was normal, his pulse perhaps a little more rapid; his respiration, when he remained quiet, was slow. He complained of no pain, but only of a certain amount of disability in the motions of the right arm and leg. After drinking a cup of milk he fell into a quiet sleep, from which he did not awake until the following morning, the time being then a little after midnight. In the morning no evil effects from his accident were noted, except some muscular disability of the right side. He asked for his discharge, which was granted, and he passed from observation.

The second case also came under the notice of the reporter, and occurred during August of this summer in the large Bessimer works in a neighboring town. This mill is illuminated with Weston's duplex lamp, the dynamos being of the same make, five dynamos to fifty lights. A description of the accident cannot, perhaps, be more accurately given than in the words of the gentleman who experienced it:

"On a wet, rainy night, in an open shed, I received a slight shock when using one hand, protected by a cotton handkerchief, in adjusting the lamp. I received the final shock in trying to remove the lower carbon, using both hands again, supposed to be insulated by a double wrapping of cotton handkerchief, the one hand holding the carbon and the other slacking off the adjusting set-screw. Now

for my sensations: It seemed to me as if there was an instantaneous bright flash, which may have been due to the sudden change from light to so absolute a darkness that it appeared to have body. The next sensation, after appreciating this inky darkness, was that of trying to tear myself away from something that held a terrible grip upon me. My hands seemed to hold on, while my body was trying to get away, every nerve and muscle being strained to its utmost. My next impression was, when I opened my eyes and found I was lying upon my back, perfectly straight, but in exactly the opposite position to the one assumed when I was standing, showing that I had been completely turned around. One carbon was found about ten feet away from my one side, and the socket which holds the lower carbon about the same distance away from my other side. This I had torn out of the lamp. Above me the lamp was swinging violently. The whole time from the moment the current struck me until I picked myself up was less than three minutes."

When seen this gentleman complained of no evil after-effects, except a great feeling of muscular soreness, produced, no doubt, in part by the number of bruises and brush burns which covered his thigh and back, showing how violently he had been thrown upon the ground.

JEQUIRITY.

By W. Cheatham, M. D., Lecturer on Diseases of Eye, Ear and Throat, University of Louisville.

I THINK I have given jequirity a pretty thorough trial in my practice, having used it in not less than seventy-five cases, with almost uniform success. I have used it in almost all stages of granular ophthalmia. In one acute case with considerable muco-purulent discharge, after trying the usual remedies with failure, I used jequirity with prompt success. I have yet to see bad results.

My method of applying the jequirity is different from that of others, in that I use the powder. Mr. J. A. Flexner, of 248 5th Avenue, this city, has prepared for me an impalpable powder. I evert the upper lid, and with a little cotton on a holder, I brush a little of the powder over the conjunctival surface. I often, as it were, feel my way by putting, at the first application, a very small portion of the powder on the conjunctiva. If this does not excite an excessive inflammation, and does not correct the granulations, the next time, say in three or four weeks from the first application, I become a little more bold, and apply a larger quantity of the jequirity. I believe the results of this treatment to be better the more rapid the inflammation, consequently the powder is of more service than the infusion. Again, the powder can be kept for months, or, I believe, forever, without losing its strength. Infusions have to be freshly made. As to the danger from the jequirity, I think it has been over-estimated, and I feel sure, if there is any danger, the use of the powder does not increase it. The inflammation resulting from the jequirity is so easily controlled by cold water, that its dangers are reduced to a minimum.

Louisville, Ky., Dec. 9, 1884.

CONVALLARIA MAJALIS.

By Dr. Edw. T. Bruen, Assistant Professor of Physical Diagnosis, University of Pa., Physician to Phila. Hosp., etc.

WHEN a new drug is introduced to the notice of the profession, it is interesting to note the manner in which it is received The physiologists carry it to the laboratory and a group of practitioners are always ready to investigate its uses as a new remedy, and by a practice as divergent as possible from their fellows, they endeavor to obtain a quasi-leadership. These men speedily report results which for a time win the credence of many. A third class, more cautious, are eager to combat disease by finding new combinations or proportions in which to use old and well-tried drugs, and are ready to vaunt the efficacy of new drugs only after they have learned by chemical and physiological analysis the real properties of a remedy, and have given it a wide clinical trial.

Convallaria Majalis has received the attention of all these classes of students, and we can now probably estimate with some degree of fairness its proper position in the therapeutic armamentarium.

As early as 1851 G. F. Waltz discovered in the Convallaria Majalis two active substances, convallarin and convallamarin. The first is crystalline, insoluble in water, and, according to Dr. Marmet's experiments, acts as a simple purgative. The glucoside convallamarin is soluble in water, and is the principle to which the plant owes its action on the circulation.

A synopsis of the action of convallaria upon

the circulation establishes, according to Marmet, that given in moderate doses it first slows the pulse and augments the power of the contractions, but finally quickens the pulse, and kills by direct action on the heart. Previous division of the vagi does not interfere with the development of these phenomena. These observations have been confirmed by other investigators, their experiments showing that convallaria slows the action of the heart and decidedly increases the blood pressure.

If a toxic dose has been given, the heart's beats become very rapid and irregular, the arterial pressure still being much above normal. Finally the pressure begins to fall, the cardiac pulsations grow more feeble, and death occurs through syncope. The pneumogastric nerves are weakened, but never paralyzed, whilst the general nervous system is not affected.

The first query which arises must be the prudent one—is the drug safe for clinical use? This may be answered affirmatively, because an analysis of the physiological action shows a striking similarity to the well-known drug digitalis. In common with this drug there is claimed for convallaria a primary cardiac stimulation exclusively on the heart and its contained ganglia, with a probable action upon the vaso-motor system, corresponding with the known effect of digitalis on these centres. It differs from digitalis in that the pneumogastrics are weakened, though any influence which the drug possesses on these nerves appears but slight. Now we can easily measure the effect of digitalis upon the pulse-rate, arterial pressure, and cardiac contraction; we can, therefore, feel that its effect upon the human being is so positive that we can increase or diminish the dose upon reasonably sure data.

We are reasonably assured that there is no danger from cumulative action in the employment of digitalis, save in cases of dropsy with almost suppressed urinary secretion, and only in these cases if the digitalis is imprudently continued in large doses without any apparent physiological result; and even if such a cumulative action should result, usually the state is manageable. With convallaria, cumulative effects need not be apprehended upon the same principle, since the action is usually prompt, a week or ten days deciding the value of the drug in any special case.

Convallaria may be used with confidence, so far as its effect on the stomach is concerned, since it is well borne, unless uræmic nausea is present; indeed, in this small particular the drug is more acceptable than digitalis.

Again, convallaria is a safe drug to use because the paralysis of the cardiac muscle is probably one of over-stimulation, Dr. Isaac Ott (*Archives of Med.*, Feb. 1883) having found the arrest of the heart to be systolic, the heart muscle not being able to respond to the most powerful galvanic stimulation. This sequel is also parallel with digitalis, and the outcome is so obvious that it can be readily averted.

The second query which presents itself is, has the drug been found markedly useful in clinical experience? Unfortunately a negative seems the unavoidable reply. It has been found that the drug has long been used by the Russian peasantry for the relief of dropsy. Quoting from an article in the October number of the THERAPEUTIC GAZETTE we read that "Prof. Sée ranks it before digitalis, * * * * * it is applicable then to mitral diseases with dropsy; at the same time it is well to make this reserve, that *when there is albuminuria* the diuretic action is considerably lessened."

In how many cases of mitral disease with dropsy could we employ this drug if we omitted the above class? After a quite extensive trial of the drug, I am compelled to state that I have found the diuretic action of convallaria upon the human subject to be thoroughly unreliable. Now when we consider that the effects of convallaria as a diuretic are probably, like digitalis, secondary to its effect upon the cardiac action, we can be prepared for disappointment in its use. The use of the drug as a cardiac tonic is upon the testimony of many of the most reliable observers "only occasionally attended with success—very generally with failure."

However, we can employ convallaria in the following classes of cases, with reasonable confidence:

1. In functional heart disorder, especially palpitation and irregular cardiac action dependent on general debility. Also in cases of anæmia or hysteria, and to remedy the irregular action of the heart as caused by tobacco.

2. In palpitation and dyspnœa, associated with phthisis, or asthma before cardiac failure from fatty changes ensues.

3. In cases of acute disease of the lungs, associated with cardiac irregularity; for example, croupous pneumonia, in cases when digitalis has failed.

4. Convallaria loses its effectiveness in heart

disease, valvular or otherwise, in proportion to the amount of fatty degeneration of the heart. It is admitted that digitalis is also subject to this rule, but its effectiveness is far superior to convallaria.

5. Mitral regurgitant disease, with or without irregularity, is less positively benefited than other forms of cardiac disturbance, perhaps because in these cases fatty degeneration is frequently present, especially if there is irregularity.

6. Among the group of organic valvular diseases in which convallaria may be more serviceable than digitalis, is mitral obstruction, and it is precisely in these cases that digitalis sometimes fails us.

In conclusion, it has appeared to me that if at all useful, convallaria is more of a cardiac regulator than digitalis. Augmentation of the systole is not so apparent, and the drug cannot compare as a cardiac stimulant to digitalis or caffeine.

An infusion of the flowers and leaves, made similarly to the infusion of digitalis, ought to represent the virtues of convallaria, although I have always employed the fluid extract (Parke, Davis & Co.) in doses of 15 to 20 drops every three hours until the desired effect has been produced. A week or ten days' trial should suffice to develop the possible usefulness of convallaria.

COCAINE IN OPHTHALMIC SURGERY.

By P. D. Keyser, A. M., M. D.*

IT IS NOT always pleasant to call a halt; but as a cautionary measure it is often necessary, for thereby many disasters are prevented. Such is the position I feel now compelled to take as regards the free and ready use of cocaine in the eye for all and every operation.

When it was first introduced as a local anæsthetic in the eye, I procured some of a 2-per-cent solution of Merck's salt of the hydrochlorate and like all others, was perfectly delighted with it in a few minor operations that I made after its instillation. But finding that it did not appear to be sufficiently strong to extend its action deep enough for tenotomy in strabismus, I got some of the salt itself from Mr. L. E. Sayre, Pharmacist, of this city, and made a 4-per-cent. solution. I found that everything went well with this—in so far that during the operation there was no pain—but in more or less all of the cases there was pain, and quite severe pain at times, soon after the operation, which continued for some length of time—until I came to cataract operations, when affairs took a different turn and arrested my ardor in its use.

On Nov. 13th last my colleague at the Wills Eye Hospital, Dr. Strawbridge, used it in an eye on which he made extraction for cataract, and in less than twelve hours after there was panophthalmitis developed. He called my attention to it, wondering if it could have been caused by the cocaine. But at that time, never having had any bad luck with it, nor having heard anything unfavorable in its use, I really thought it could not have had any bad effect in the operation and so informed him; believing that it was one of those unfortunate cases that sometimes, but rarely, occur in the operations for cataract by V. Graefe's method. I still went on using it with happy results in strabismus, iridectomy, etc., but not without pain in enucleation, but less when injected under the recti muscles and back of the ball and along the optic nerve, until Dec. 13, 1884, when I made at Wills' Eye Hospital two extractions as follows, with very bad results:

Caroline Baur, æt 59, a healthy, well-nourished woman; double cataract. R. E., 6 years duration, L. E., 1 year. At 2:30 p.m. three drops of a 2-per-cent. solution of the hydrochlorate of cocaine, made by Mr. L. E. Sayre, pharmacist, from the pure salt made by Merck, Darmstadt, were instilled. At 3 p.m. three drops again, and at 3:05 o'clock one drop, after which the operation was made perfectly and no mishaps of any kind. The vision was good, fingers counted promptly. There was not the least pain experienced during the operation.

That night at 1:30 a.m. pain had set in, and became so severe that the nurse called the resident surgeon of the hospital, Dr. Geo. T. Lewis, who found some purulent discharge coming from between the lids, slight œdema of the lids with marked injection and swelling of the ocular conjunctiva and cornea infiltrated. Hot water was applied, giving temporary relief. At 3 o'clock a.m. he found pain and all the other symptoms more marked. Hot water applications did not give relief, so he gave one-eighth grain of sulphate of morphia by the mouth. At 10 a.m. I saw her and found a strong, well-developed panoph-

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thalmitis, and ordered an instillation and wash every three hours of a solution of hydrarg. bi-chlor. corros. gr. $\frac{1}{48}$ to $\frac{\bar{z}}{3}$ i water, and hot water (104° F.) fomentations on the eye three times daily for 15 minutes at a time.

12, 15, 1884. Lids more swollen, ocular conjunctiva slightly less injected, the cornea more extensively and more densely infiltrated.

12, 16, 1884. Less pain in the eye, being more on the top of the head than in the eye. Swelling about the same.

12, 17, 1884. Swelling receding—that is, not such tension; pain still in the head.

12, 18, 1884. Swelling still less, and from this time gradual recession went on to atrophy of the ball.

On the same day and a few minutes after, I operated on John Cull, æt 18, for traumatic cataract and anterior synechia which was causing sympathetic irritation. The cocaine was of the same strength and instilled at the same intervals as in that of the above mentioned case, Caroline Baur. The incision of the cornea was made without pain, and anterior synechia cut loose and the lens-mass let out. The operation went well and vision good. After the operation, exactly the same inflammatory action took place as in the former case.

By 1:30 a.m. that night it was necessary to call the resident surgeon to him, and coming from Mrs. Baur he found the same condition of panophthalmitis. I saw him also at 10 a.m., and ordered the same treatment as in my first case.

On the 17th the swelling was so intense and the pain so great that I found it necessary to split the lower lids to relieve the pressure it was exercising across the cornea and ball. This operation gave him relief.

In both of these cases panophthalmitis set in about ten to eleven hours after the operation, just as in Dr. Strawbridge's case. This naturally called my attention to the fact that the cocaine might have been perhaps the cause in all these cases from the sudden reaction of the vessels which takes place after its use.

My friend and former pupil, Dr. S. S. Koser, of Williamsport, Pa., was in my clinic shortly after the above occurrences and informed me of his bad luck with cocaine as follows:

Dec. 1st he made an iridectomy for occlusion of the pupil, using a 4-per-cent. solution of cocaine as a local anæsthetic, and had panophthalmitis in ten or twelve hours after. On the same patient he had made a few weeks previously, a successful operation for an artificial pupil on the other eye without cocaine.

I noticed in my cases that the inflammation arose just or much like that after the use of the jequirity in trachoma, excepting that there was more swelling of the ocular conjunctiva, and even more so and somewhat different from that in panophthalmitis traumatica. In the latter the inferior part of the bulbar conjunctiva is much more swollen than the superior part, which really has very little swelling at first, being only well and fully injected, while in the cases after the use of cocaine the superior part of the conjunctiva was as much swollen as the inferior. This whole œdematous condition of the bulbar conjunctiva was especially marked; more so than in anything I have seen. Dr. Lewis says that he noticed the same in Dr. Strawbridge's case. This may be pathognomonic of the action of the cocaine in the inflammation which may occur in the reaction that takes place from the blanched condition of the vessels and tissues caused by its use.

I would not have thought anything about the cocaine causing any trouble had only one case of mine gone badly, but when the two, an old but healthy person and a strong, vigorous, healthy young man, and both operated on the same day under like circumstances, were affected exactly alike and in the same stage of time, I was forced to consider not only my own but also Dr. Strawbridge's case again and compare them carefully, and send a line of caution to the profession.

In no paper upon the subject have I as yet seen any suggestions of the physiological action of the drug. From my observations I think that it no doubt paralyzes the nerves of the vessels, causing at the same time a constriction of the same as seen by the blanching of the part acted upon. It may also interfere with the sympathetic system and nourishment of the tissue, and then the reaction which takes place after its use is too sudden, and congestion and inflammation occurs. It may be that coagulation of the blood takes place in the vessels and inflammatory action may arise therefrom. A case showing the sudden reaction and filling of the vessel came under my observation in an operation for cataract by my assistant, Dr. Frank Fisher, a few weeks ago. A preliminary iridectomy was successfully made, without cocaine six weeks before the time of extraction of the lens, and when the lens was to be removed I went with him in consultation and

dropped in a 2-per-cent solution of the cocaine three times before the operation. The cornea was opened, capsule lacerated and lens delivered without the least mishap or a drop of blood to be seen. The next day on examining the eye the anterior chamber was nearly half filled with blood. There was no pain during the operation, but after an hour some pain took place for a while and then passed away. The eye did well, although the hypæmia was a considerable time in being absorbed. I know from experience on myself in rectal fissures that there is more and longer pain after its use than when treated without it.

The solution of cocaine I used was comparatively fresh, being only a few days old, and under the microscope showed in a little mould that soon had formed, nothing deleterious in the least. My friend, Dr. Carl Seiler, was kind enough to examine it with me and found no micrococci to cause the inflammation.

I have had but seven cases of personal observation of its use in extraction of cataract and in three of these panophthalmitis took place, and in one a hæmorrhage in the anterior chamber almost immediately after, which is to my mind rather a bad showing in its favor in this delicate operation, and rather intimidates me in its use in these cases, and in iridectomies, although as yet my iridectomies have done well.

As a local anesthetic in the removal of foreign bodies from the cornea, strabismus and such external operations, I know of nothing equal to it. But I would be very careful in its free use where the cornea is opened and the iris incised.

While writing this article I learned of two other cases of panophthalmitis occurring after its use, but have not had time to get the particulars.

NOTE ON EFFECT OF INGESTION OF LARGE QUANTITIES OF GRAPE SUGAR ON THE URINE OF CHILDREN.

By Dr. J. M. Keating.

My attention has so frequently been called to the fact that sugar, to a greater or less amount, is found at times in the urine of persons who are supposed to be in excellent health, and the question has so often arisen whether or not diet has anything to do with this, that I determined to satisfy myself by a series of investigations as to the correct interpretation of this condition. I have had under observation at various times numbers of infants whose diet was composed of milk and *Mellin's food.* Some of them took as much as an ounce and a half to two ounces of Mellin's food during the 24 hours. This consists, as is well known, of malted grain, a large part of the starch of which has been transformed into grape sugar. I have failed to detect a single trace of sugar in the urine of any case of this kind examined by me so far, and as all these children are in excellent health, I am led to conclude that the appearance of sugar in the urine of adults, whether it is or is not traceable to the diet of the individual, is an evidence of, at least, functional derangement which demands careful investigation. From these experiments I believe that if we can draw an analogy between a healthy infant and an adult—and I see no reason why we should not—a sugar diet, unless in very great excess, in a healthy individual ought not to produce saccharine urine; if such is found disorder or disease is probable.

CHEKEN.

By C. W. Tangeman, M. D., Cincinnati, Ohio.

THE physiological investigation of new remedies for the purpose of enriching the armamentarium of the physician has not received the amount of attention by the American physician that is due this part of the subject. It is scarcely necessary that we give reasons for this apparent neglect. It is not on account of incompetency, as much as the lack of time. Individuals who are fitted to make physiological investigations are usually so over-burdened with the active pursuits of the practitioner that they forget laboratory work entirely, while the majority of men are so situated that they cannot carry out experiments, since they have not the proper assistants and appliances. All that we can ask of the busy general practitioner, is to closely observe the clinical effects of medicine; to make an effort to verify the deductions and conclusions of the pharmacologist. He need not always write on the subject of new drugs, for it is plainly proven that even old and time-worn remedies may possess properties, the discovery of which will cause astonishment everywhere; to prove this we need only refer to cocaine, the active principle of

erythroxylon coca. This drug, though not officinal, has been known and employed, for a number of purposes, for a century or more, and there has not been so much as a suspicion even that it would play the important role of a local anæsthetic of such indescribable value as it does at present. The reason why so many drugs that are new are brought to the notice of the profession in the past few years, is because our intercourse with foreign countries has become more extensive; and physicians from our midst, from our institutions, with a thorough knowledge of their profession, have permanently taken up their residence among a class of people who, though they were but half civilized, have many valuable remedies that were entirely new to us, since they are indigenous only to that country or climate.

Many times the introduction of a new remedy meets with a great deal of opposition, since there is always the suspicion that a pecuniary motive is the sole object; but where a reliable pharmaceutical establishment, like Parke, Davis & Co., puts out a remedy for investigation, we can without the slightest hesitation assert that the agent is no secret nostrum. The above firm manufactures no specifics, and the recommendations found in the literature accompanying each sample of medicine is from some physician and is *bona fide*. When cheken, manaca, grindelia robusta come to us recommended for certain diseases and their use fails to give the desired result, the manufacturing chemist is not at fault. The remedy may be inert or misapplied; if it is inert, the sooner this is determined the better for the profession; if it is a want of knowledge, the report of cases with a complete diagnosis, whether the result is good or bad, will assist to establish a basis for the remedy, or discard it at once. Cheken has been employed in the country where it is indigenous in a number of diseases, especially where an astringent was indicated; for example, in leucorrhœa, gonorrhœa, and bowel complaint. But it was a special favorite in the treatment of ordinary coughs, as a friend of the writer stated, who formerly was a resident of Chili and employed for years in the lumber business (now a resident of Ohio), it is a common remedy, used by the laity by making a decoction of the leaves, that were green the year around. The leaves were also frequently chewed by the woodsmen on account of the aromatic taste and medicinal virtues that they claimed they possessed; the taste on first chewing the leaves is pleasant, but later they cause smarting and a sensation of drawing the tongue and mouth together, which also corresponds with the analysis made some time since by Hœhn (THERAPEUTIC GAZETTE, p. 285, Vol. III.). It contains an essential aromatic oil, which gives to the leaves their odor and pungency, and tannic acid which causes the peculiar sensation to the tongue. The therapeutic claim for the expressed juice of cheken leaves in diseases of the eye was undoubtedly due wholly to the tannin that it contains, for when that was precipitated and filtered out, the juice had no apparent effect on the mucous membrane of the normal eye of animals. In dysentery the effect is undoubtedly due to the astringent, since, when the agent is administered for some time in bronchitis, there is a tendency to cause constipation. It is scarcely necessary to give the botanical origin of cheken, since it would only be a repetition of what has been so ably given in the THERAPEUTIC GAZETTE, Oct. 1881, p. 395, by Mr. Hutchinson, who made a chemical examination of the leaves and found them to contain a volatile oil. The fluid extract of cheken seems to have a slight tendency to increase the urinary secretion. The remedy largely passes out from the system through the kidneys and bronchial mucous membrane, for it is soon detected in the breath and urine. When a full dose of the medicine is taken a general sense of warmth is experienced and the action of the heart seems to be slightly increased. When a large dose or two (℥ ii) has been given to an animal, all the organs that eliminate cheken, especially the kidneys, suffer from irritation. Toxic symptoms have not been observed as yet; the intestinal mucous membrane is also irritated and congested. Since the aromatic oil seems to be largely eliminated by the bronchial and renal mucous membrane, decided effects are produced at these points. In diffusing outward the remedy necessarily has an effect on the tonicity of the vessels and possibly on the character of the secretions.

Clinical experience with this remedy is necessarily rare, but it seems to confirm these theoretical conclusions. The actual contact alters the relaxed condition of the vessels and hence the secretions of the mucous membrane. We can compare the action of cheken to that of eucalyptus. The vapor of cheken inhaled in large quantity produces analogous effects to the internal administration, but it has a more decided effect on the mucous membrane of the bronchial tubes. It seems

that we are pretty safe in saying that the therapeutic effect is due to the local action. The question now arises is the drug a better agent for the treatment of the diseases of the broncho-pulmonary mucous membrane than those that we already possess. It has been claimed for the preparations of ammonia that they are stimulating expectorants. They are eliminated by the lungs to a great extent, and by thus escaping it is probable that they stimulate secretion and liquefy the products of inflammation. Yet in the author's hands the ammonia preparations have not yielded very good results, and when the dose was increased the drug acted as an irritant to the intestinal mucous membrane. It is extremely probable that the good effects ascribed to muriate of ammonia are due largely to the extract of licorice, with which it is generally given, or some other remedy with which it is combined. There is no other field in therapeutics where a good, efficient remedy could do so much good as in broncho-pulmonary diseases. The question then arises does cheken possess the desirable properties of an expectorant when given in such doses as are not injurious to the patient? It acts as a slight stimulant and tonic, and gives tone to the relaxed mucous membrane, making breathing freer, and restores the mucous membrane to a healthy action. It is, therefore, indicated in chronic rather than in acute cases. In two cases of confirmed phthisis treated at the Ohio Medical College Clinic I noticed a decided improvement in the cough after a three weeks' course of cheken, but so soon as the remedy was suspended the symptoms were the same as prior to its administration, therefore only a temporary benefit was obtained.

Case I.—Mrs. M., aged 68, robust and hearty, complained of having taken cold, from which she had been suffering for some time. A physical examination showed symptoms of bronchial irritation, with moist râles in the larynx and bronchi. The expectoration was tenacious and difficult of removal; the paroxysms of coughing occurred more frequently during the night. The ordinary cough mixtures and teas had been tried, but without any beneficial results. Cheken was now ordered, more as an experiment than anything else, in one drachm doses, repeated every three hours. After three days the coughing did not disturb the sleep of the patient any more; this treatment was continued for two weeks, at the end of which time the case was discharged, cured.

Case II.—W. J., aged 28. Painter by trade. Had been exposed to cold and wet during work out of doors, and did not change his clothes until at night; he then complained of chilly sensations and fever. The following day there was pain in the chest on the left side, and some cough; the diagnosis was acute bronchitis. The fluid extract of cheken was ordered in teaspoonful doses, repeated about every four hours. Subsequently the dose was increased to 1½ teaspoonfuls, but no benefit was noted from its use.

Case III.—A. P., aged 23, musician, had complained of cough and shortness of breath for a few months, the symptoms being worse each time after a hard day's work. P. looked robust and hearty, so, thinking it to be only an ordinary cough, cheken and grindelia robusta were given in simple syrup, but the patient grew gradually worse. A physical examination showed incipient phthisis. The same medicine was continued, until the patient refused to take it any longer on account of the nausea it caused. The disease ran a rapid course and ended in the death of the patient.

Case IV.—H. O., aged 60, suffered with old chronic cough which had lasted for years. It was scarcely noticeable during the summer, but as soon as damp weather set in, the cough became quite annoying, causing loss of sleep and general debility. There was little or no expectoration. Muriate of ammonia with ipecac and opium had been given a faithful trial, but the benefit was only temporary. It was now suggested that cheken be given a trial; its use was followed by the prompt relief of the cough, a more easy expectoration, and freer breathing. The patient now rests quietly at night.

A few more cases of this kind could be cited were it not so much like repetition. By far the best results are obtained in the cough of old people where the whole system is in a relaxed condition. Some observers seem to favor small doses, 15 to 20 drops repeated every three hours, but in the few cases that I have been able to follow up at the clinic, I find that one-half to one teaspoonful doses have given the best satisfaction; in only one case was nausea recorded, and he received large doses (℥ iss). Usually, the medicine was well tolerated.

Observations with this drug are rare, and it is to be hoped that this short and meagre report may stimulate all who have an opportunity to give the remedy a trial, to close observation for a good expectorant. It is a much-needed remedy.

The Therapeutic Gazette

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Leading Articles

TE SALUTAMUS.

A COMPLETE change of editorial management such as has just befallen the THERAPEUTIC GAZETTE renders very fitting upon the part of the new editors a brief statement of the policy which they expect to carry out. Especially in this case when the extraordinary success which has attended the efforts of the previous editors naturally causes some wonder at the change of management, and fear, on the part of the subscribers, lest their journal may not be as valuable and as comely in its new as in its old clothes. Therefore, whilst we extend greetings to the wide circle of acquaintances that we make with to-day's issue, we desire to express our high appreciation of those who have built up the prosperity of the GAZETTE, and to say for ourselves the few words that seem necessary.

In the first place we desire to say, most emphatically, that the THERAPEUTIC GAZETTE is to be a purely scientific journal, discussing without fear or favor all scientific questions within its scope, but avoiding, with absolute silence, all ethical questions whatever, even those seemingly in immediate relation with therapeutics. Medical education, medical ethics, medical politics and similar topics are subjects of vital importance and of much interest —only, this journal is not intended to throw light upon their intricacies, exists not for them, and will have nothing to do with them.

Probably no one will accuse the present editors of being hostile to the modern scientific school of pharmacology, but we cannot approve of the tendency to separate theoretical from practical therapeutics, which seems to exist in Europe, as is witnessed by the fact that there are pharmacological professors justly renowned, who have, nevertheless, little or no acquaintance with practical medicine. We believe that knowledge is of value to the physician, as a physician, only in so far as it enables him to relieve the sick, and that the attempt to isolate the scientific medical savant from the practical doctor, is fraught with ill. The savant will not know properly how to guide his researches so that they shall yield a harvest of valuable fruit; and the practical physician may very readily drift into a routine therapeutist. The wisdom of the publishers has brought together in the editorial management of this journal the laboratory, the hospital ward, and the round of the private practitioner, and it shall be our endeavor, in the pages of the GAZETTE, to have each of these equally represented, so that science and art may be harmonized into one.

It is intended to confine the editorial work of the journal to topics having immediate bearing upon the treatment of disease. There will be general leading articles and shorter editorials upon such subjects, but a large space in each number will be occupied by a department to be known as that of Therapeutic Progress. The effort will be made to render this thoroughly representative of all that is published, in the four languages, having direct and immediate value to the man who is contending with disease. In other words, we expect that the THERAPEUTIC GAZETTE will by this department enable its reader to feel that he is completely *au courant* with the onsweeping tide of therapeutics the world over.

In the department of notes and queries at the end of the journal we expect to publish answers to all questions from our subscribers that seem to us to have a therapeutic bearing as well as a general public interest.

There are two ways of approaching the problems of therapeutics. In the one method the individual drug is made the subject of discussion; in the other the individual disease is the text of the discourse. A general article on quinine would of necessity have much in

common with one on the treatment of malaria, but yet would in many ways be quite diverse. We hope in the future that both classes of writings—both plans of viewing the subject—shall be represented in the original department of this journal; but while the editorial writing is to be confined to therapeutic subjects, original articles upon other medical topics are not to be rigidly excluded.

Dermatology, neurology, ophthalmology, and various small compartments of medicine have numerous journalistic lamps to enlighten their inmost corners; but, although therapeutics is the most important of all the branches of medical science, having, indeed, within it the very *ultima ratio* for the existence of the profession, yet there is no prominent journal in the English language devoted to its interests. Hardly, then, can we be over-confident in believing that sufficient therapeutic matter of value can be found to fill this, our lamp, with oil. We ask, however, our medical confréres to remember that we cannot make all of the oil, and that the future of this journal depends far more upon the medical profession of America than upon us. By the avoidance of irritating questions, by labor and conscientious effort, we hope to do our part so as to meet general commendation, but we earnestly ask for carefully thought-out articles resting either upon experimental research or practical experience with the sick. We are happy that the circulation of the THERAPEUTIC GAZETTE is already so large that very few, if any, journals in the world outreach it. The doctor who has anything to tell his professional brethren naturally desires to tell it to as many of them as may be. In selecting the GAZETTE he will reach as wide a circle of readers as is possible, and will also aid in building up a periodical which we hope may become a great therapeutic journal, carrying its monthly freight of healing into every part of the globe.

THE TREATMENT OF DIPHTHERIA.

IN Schmidt's Jahrbücher, No. 2, 1884, Dr. Kormann, of Coburg, has collected extracts of all the articles which during the last three years have appeared on the treatment of diphtheria, and an analysis of his valuable compilation shows that the list of hundreds of drugs employed in this disease is reduced to absurdly small proportions if only those are admitted in which there seems to be reasonable grounds for the attribution of curative powers. No specific has as yet been found, and we are apparently as far from its discovery as ever.

In any consideration of the treatment of diphtheria, prophylaxis should, of course, occupy the first place; but unfortunately a careful examination of the various plans which, during the last three years, have been proposed for preventing the spread of diphtheria, shows that just as no specific has yet been found for the cure of this disease, so is there no certain and infallible means of preventing its extension when once it gains a foothold in any community. The plan most highly recommended, with this end in view, by the commission appointed by the Société Médicale des Hôpitaux was, in addition to scrupulous cleanliness, the free use of a spray of carbolic acid solution in the sick room. It is claimed that by such a plan fresh infection can be to a large extent prevented, though of course such protection only applies to contagion from the patient, and does not confer any immunity to other sources of infection.

Bedding and clothing must be thrown after use into boiling water or into solution of carbolic acid, and the latter should also be used in a dilute form by all persons brought into contact with cases of diphtheria, for washing the face and hands and for gargling the throat. Isolation must be practiced to as great an extent as possible, and in any case no child in whose family diphtheria is present should attend school for at least two weeks, when the disease is isolated, or for four weeks when this is not the case, and funerals of persons dying of this disease should be strictly private.

As special measures which may, perhaps, be valuable, and are certainly worthy of trial, may be mentioned the cauterization of the tonsils by the thermo-cautery proposed by Prof. Rossbach. As is well known white blood-corpuscles pass frequently in great number through the tissues of the tonsils, and it might consequently be expected that bacilli would enter with equal readiness; the formation of a cicatrix by cauterization would be the best possible means of rendering this impossible. So also (THERAPEUTIC GAZETTE, Oct. 1883) Dr. F. Peyre Porcher states that the use three times daily, in water, of a teaspoonful of a mixture composed of Potas. chl. (4 to 8 grms.), Tr. Ferri chl. (8 to 12 grms.), quinine (0.9 to 1.2 grm.), Sod. hyposulphit. (4 to 8 grms.), Alcohol (30 to 60 grms.), and water (180 grm.), seemed to arrest the spread

of diphtheria in families in which it was already present.

In the treatment of diphtheria, balsams and antiseptics are generally asserted to be our most valuable agents. Of the former turpentine and petroleum are probably the most important, and in some instances, though not specifics, are reported to have worked almost miraculous results.

Turpentine should be given in large doses. Adults should take a tablespoonful of the oil twice daily, children under five years a teaspoonful, older children a dessert spoonful, followed by milk or wine. As soon as the symptoms begin to improve or there is any evidence of strangury or albuminuria, its administration should be stopped, to be again used later if the symptoms require it. Vomiting may be prevented by the simultaneous use of a little ether. The first influence of turpentine on the diphtheritic process is to diminish the fœtor from the mouth, which often, even in the worst cases, does not return. Later, sometimes in the second day of its use, the membranous deposit becomes softened and loosened, the inflammation decreases, and the difficulty in swallowing passes off. In a series of 43 cases of undoubted diphtheria treated in this manner and reported by Dr. Satlow, of Gohlis, near Leipzig, the mortality was two and one-third-per-cent. for all cases, and only three-per-cent. for children.

Petroleum is stated to have the property of softening and facilitating the removal of the diphtheritic exudation when applied locally, as with a brush, or even better, by irrigation.

Of the antiseptics and disinfectants, iodoform seems to deserve the first place, and as a result of experimentation by various observers, the best mode of application is to dissolve five grammes of balsam of Tolu and 2.5 grammes of iodoform in 25 grammes of ether, filtering the balsam solution before the iodoform is added; all accessible diseased portions of the mouth and pharynx may be freely pencilled with this solution as early in the disease as possible. So applied in balsam solution or in collodium, the action of the iodoform is rendered more prolonged, and access to the membranes of air and putrefactive agents prevented. Often after one day of this treatment the membrane may be removed without difficulty, and is rarely reproduced. Nevertheless, in spite of this arrest of local disease, cases may still prove fatal in which evidences of general infection, such as great cardiac weakness, were present before this mode of treatment was commenced; but it appears that if iodoform is used early enough such cases will be rendered comparatively rare. Thus in the series of 112 cases reported by Dr. Korach, of Cologne, only eight proved fatal (seven per cent.), of which seven were in the group of 40 classed as exceptionally severe (17 per cent.)

Where the diseased portions of the pharynx or nose are out of reach, the iodoform may be applied in the form of a spray, or it may be blown into the nose in the form of a powder.

Numerous other authors publish equally favorable statements in cases treated on this general plan, though, like every other non-specific treatment, numerous cases will be met with in which iodoform, like everything else, will fail. But, as Liebermeister has pointed out, there is nothing irrational in every specific disease of searching for a specific cure for that disease, and he details results of the examination of numerous remedies in this connection, among which may be mentioned benzoate of sodium, boracic acid, bromine, papain and papayotin, gastric juice, corrosive sublimate, turpentine and iodoform. While none of these can be regarded as specific cures, iodoform yielded in his hands by far the most reliable results, particularly when used at the very onset of the disease.

Chinolin also has its enthusiastic advocates in the treatment of diphtheria. An analysis, however, of the cases in which chinolin is claimed to have proved to be of great service, proves that by far the greatest majority occurred in adults—cases which in all probability would have got well had no chinolin been employed. According to Dr. Unruh, of Dresden, the best form of application is in a five-per-cent. solution in equal parts of alcohol and water applied locally twice a day with a brush or pledget of cotton, with frequent gargling with a two-per-cent. solution in the intervals, the throat being washed in each instance afterwards with water. Care must be taken not to prolong the application, otherwise troublesome ulcers may be formed, though chinolin is not as irritating as carbolic acid. Albuminuria occurred in 60 per cent. of the cases in which chinolin was employed; even therefore if chinolin does exert a beneficial influence on the local process, it cannot be claimed to modify the general infection, of which albuminuria is one of the most characteristic signs.

Bromine appears to follow next in popularity to the agents above alluded to. Its best method of administration is to dissolve equal

parts of bromine and bromide of potassium in 100 parts of water; a sponge is then moistened with this solution and placed in a glass cylinder, open at both ends, and the vapor arising from the sponge inhaled for a few minutes every one or two hours. Care must be taken that the irritating fumes do not enter the eye or the nose, when the latter organ is not implicated. The same solution, diluted with four or five parts of water may also be used for local application. As a result of this treatment, Dr. Schütz, of Prague, claims that every one of 36 cases recovered without implication of the air passages. So also Viard had 26 recoveries in 26 cases, and his testimony as to the favorable action of bromine is confirmed by several others; thus Killer had only one death in 50 cases. Their results are, however, so exceedingly favorable that it must be inferred that they had to deal with a mild form of the disease.

Mercurials also have been extensively used in the treatment of diphtheria, in the form of internal administration of corrosive sublimate and calomel, and the local application of a weak solution of the former to the diseased portion of the pharynx.

Space will not permit of even the enumeration of the various other drugs which have been employed with more or less asserted success in the treatment of diphtheria; the remedies mentioned above are those which a careful examination of the testimony of hundreds of physicians has seemed to indicate are the most reliable.

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*NOTES ON THE TREATMENT OF BRONCHITIS, ETC.**

IT IS proposed in this article to consider certain points in the treatment of bronchitis and more especially in such forms as simple colds. It is sometimes important to break up such attacks at once. Under these circumstances a plan adopted by a well-known public speaker, who found himself in the morning before an important engagement completely stopped up, may sometimes be adopted with advantage. This gentleman simply drank tartar emetic wine until he had vomited and sweated himself freely; then toning himself up with ale and oysters, performed his task with ease. The disagreeableness of this plan prevents its general adoption, and, of course, it can only be applied to robust subjects.

Every physician knows that the sedative expectorants are used in the first or dry state of a cold. Between ipecac and antimonials there is little choice, except that the latter remedy is distinctly dangerous to very young children, and very feeble or old adults.

It is, however, not so generally known that large doses of alkalies are amongst the most efficient of sedative expectorants. The citrate of potassium is much the most eligible form for administering alkaline expectorants; of it a half an ounce to an ounce should be given in the twenty-four hours.

The following prescription has been tested during the last four or five years and found to be much the most reliable and efficient sedative cough mixture that I have ever used:

℞ Potass. citrat. ʒ j.
Suc. limonis. f ʒ ij
Syr. ipecac f ʒ ss.
Syrupi q. s. ad f ʒ vj.
M. S. Tablespoonful four to six times a day.

When there is a good deal of cough, or any excessive susceptibility of the bowels to loosening medicine, paregoric should be added in small quantity. The ipecac must be varied according to the susceptibility of the patient's stomach. Sometimes it can be advantageously substituted by tartar emetic. Usually two or three days of such medication will establish free expectoration. Then the stimulant expectorants are required. Among these may be named squills and senega. I cannot, however, with truth affirm that I have often obtained positive results from their use, and think much of their reputation is based upon tradition and upon the fact that in time even bronchitis subsides. Of the two, squills is the more valuable. Even it, however, is inferior to the muriate of ammonia. Like all ammoniacal preparations, this must be given at short intervals in order to maintain any constancy of effects. The action of the single dose can scarcely last more than two hours. Its acridity and disagreeableness may be somewhat covered by putting glycerine into the mixture. It must also be remembered that given in very large amounts all ammonia salts are capable of acting on the crasis of the blood as alkalies and of causing great vital depression.

The value of copaiba in chronic bronchitis has been long recognized, and it may

* This is the beginning of a series of brief articles upon the treatment of diseases, to be written by Dr. H. C. Wood, concerning various affections in which he believes that his experience has proved several measures not generally adopted by the profession to be of value.

sometimes be used with advantage in obstinate subacute bronchitis. When the "cold" in children is obstinate, "syrup of garlic" is very efficacious. But the stimulant expectorant which in my hands has almost replaced others of the class is the oil of eucalyptus. It may be administered in ordinary cases of adults to the amount of about 40 minims a day. Its taste is so pre-eminently disagreeable that it should be given in capsules, each of which may contain 10 minims; or, if the patient prefer, two capsules of five minims each may be taken at a dose. The oil appears to be slowly absorbed and eliminated, so that four times a day is often enough to administer it. Given in emulsion it is very apt to be the source of unpleasant eructations, but when taken in capsules is usually well borne. There are, however, some stomachs which will not tolerate it at all.

The value of counter-irritations in bronchitis and severe colds is very great, but it only seems necessary here to call attention to an old, but almost forgotten remedy, the oil of amber, as being especially valuable in the treatment of bronchitis of young children, associated as it so often is with marked nervous disturbance and a tendency to collapse. The oil diluted with from one to three parts of sweet oil applied to the chest as a sort of stupe (upon saturated flannel) sometimes acts very happily in allaying nervousness as well as internal congestion.

The management of bronchitis in very young infants will be discussed in our February number.

THE COLD WATER TREATMENT OF FEVER.

WE OWE to Jürgensen and Liebermeister the fact that the cold water treatment of fever deserves the first place among the various advances in therapeutics which have marked the last few decades. The grounds on which this statement is based are of two kinds: in the first place, statistics show that the mortality and duration of typhoid fever are distinctly lessened by this treatment; in the second place, its undoubted value in combating fever as a complication of various other diseases, its action in such cases being almost universally held to be due to the removal of the danger which accompanies every increase of the body temperature above its normal standard. In an elaborate article in the *Archiv für Experimentelle Pathologie und Pharmakologie*, Bd. xviii., Heft. 1 and 2, 1884, NAUNYN, however, on experimental and clinical grounds, combats this view which attributes the danger of fevers to the prolonged overheating of the body, and attributes the advantages gained by the cold water treatment of fevers, which he further strongly endorses, to entirely different grounds. These will be alluded to directly.

In a discussion of the significance of the febrile increase of temperature two points must be distinctly separated: the danger caused *per se* by the increase of temperature, and the value of the degree of this increase of temperature as an indication of the severity of the morbid process. Thus one might say that a temperature of 106° F. in typhoid fever indicated danger of a fatal termination and yet not mean that the increase of temperature was the cause of that danger.

That every animal dies when heated to a definite degree above the normal temperature (six degrees centigrade according to Liebermeister) is well known, and in mammals the fatal result is sometimes due to heat rigor (coagulation of myosin) of the muscles, especially of the heart. But Naunyn has shown that if only proper care is taken in ventilating and in supplying the proper amount of food and water to balance the rapid loss, rabbits may be gradually warmed up to 107° or 108° F. and kept at this temperature for weeks without evidencing any inconvenience, and when killed, without showing any lesions of any organ.

So also the human body may be gradually accustomed to a very high temperature, and the blood heated far above its normal degree without causing any serious symptom. Thus Krishaber was able to remain with perfect comfort in a dry room heated to 176° F., his temperature being raised to 107° F., the pulse to 185 and respiration to 35.

Diseases accompanied by an increase of bodily temperature usually prove fatal before the temperature reaches the point above mentioned. Such diseases may be divided into two groups: those where the elevation of temperature is due to excessive external heat, as sun-stroke; and the infectious fevers. The former class are strictly comparable to the artificial production of high temperature in animals, and in both instances the deprivation of water plays an important rôle. In the group of febrile diseases again, two classes may be distinguished: those in which the degree of fever is a reliable index of the severity of the affection, as pneumonia and typhoid fever; and those in which an exceptionally high temperature is the rule without

necessarily indicating any danger, as in recurrent fever—even though it be prolonged for a week or more.

It is, therefore, contended that in pneumonia, scarlatina, pyæmia, typhoid fever, etc., the high temperature cannot be made answerable for the excessive mortality which accompanies these diseases. Nevertheless, as is well-known, the intensity of the infection in these last mentioned diseases goes hand in hand with the increase of temperature, which may therefore serve, in the majority of cases, as a means of measuring the severity of the morbid process, though the few cases in which death is rapidly caused without any or with only slight increase of temperature, prove that the degree of fever is not the cause of death.

But while denying the share usually attributed to excessive fever in producing a high mortality, Naunyn is a strong advocate of the employment of frequent baths in the treatment of fevers. But he looks for the benefit derived from this treatment, not in the mere reduction of temperature, else were *cold* baths the most useful, but in the indirect reduction of bodily waste and the increase of renal excretion, and above all in the clearing of the sensorium and the stimulation of the appetite, the strengthening of the pulse and the removal of dyspnœa. These results, he claims, cannot be ascribed to mere cooling, for constant luke-warm baths work far more favorable results than ice-cold applications.

But whether we accept or not Dr. Naunyn's theories as to the febrile process and as to the action of baths in its treatment, his directions as to the methods of employing baths are well worthy of attention.

He divides baths into three groups: cold baths from 72.5° F. to 81.5° F.; luke-warm baths from 81.5° F to 90.5° F.; and warm baths from 90.5° F. to 95° F. The entire body is immersed in the bath and the water gently poured over the head; if severe coma is present cold water, 54.5° F., or even colder, is poured from a considerable height over the head.

The bath treatment of typhoid fever is commenced as soon as the temperature in the axilla exceeds 103° F., the frequency of the bath depending upon the temperature; thus the temperature should be measured every three hours during the day and night, and whenever it exceeds 103° F., the bath should be given. As a rule in an average case no more than eight baths will be required in 24 hours, though in severe cases a bath every other hour may be necessary.

In private practice, where so many measurements of temperature are impossible, he recommends the administration of from two to five baths daily, so distributed that the majority are given when the fever is highest; in other words, in the afternoon and evening. In severe cases a bath must also be given at midnight.

At first the cold bath should be given and should not be prolonged more than five or ten minutes; in vigorous men a bath of 72.5° F. may be given, but for weak cases and for women 81° or 85° F. is cold enough at the outset. The luke-warm bath may be prolonged for ten or fifteen minutes, but if after the first shiver on entering the bath cold should be complained of, it should be at once interrupted. After the bath, wine or warm spirits should be given.

This bath treatment may prove unsatisfactory in two different ways: either it may be badly borne by the patient, or it may fail to produce any effect. In the former case the bath has been two cold, and cold is complained of (collapse, cyanosis) either during the bath or after being returned to bed, and that in spite of warm wine, etc. In such cases mere shortening of the duration of the bath will not do; the water must be made five or ten degrees warmer and more frequently repeated. Sometimes baths fail to produce any marked permanent effect on the temperature or the pulse and sensorium; then the baths may be made a little cooler, if no unfavorable results are produced, or, better, should be given at shorter intervals and may even be made a little warmer.

Occasionally, as a result of the baths, the temperature will subsequently be higher than before the treatment was commenced; this, however, need excite no uneasiness, as the morning remission will be all the more marked and the general result, therefore, better. Sometimes, however, in very irritable cases, it will happen that immediately after the cold bath the temperature rapidly rises, so that within an hour it may be even higher than before the bath; this indicates that the baths have been given too cold, and a slight increase in their temperature will remove all unfavorable results.

In very severe cases marked by dicrotic pulse and disturbance of the sensorium the bath treatment should be commenced before the axillary temperature reaches 103° F., and frequently a warm bath may in such cases be given between two cold baths. Such a treatment is especially indicated when there is

marked delirium, tremor, subsultus tendinum or great restlessness; a warm bath in the evening then seldom fails to produce some favorable result.

Dr. Naunyn believes that if this bath treatment is carefully carried out no other antipyretic treatment will be necessary. For although the effect of certain remedies in reducing temperature cannot be denied, with the exception of quinine, none are free from danger; while quinine produces such an abnormal temperature reduction that the temperature curve loses all value as a means of prognosis or an index for therapeutics.

The diet, however, deserves strict attention; the regular diet which he employs consists of a pint of soup with eggs, two eggs additional, one quart of milk, bread and as much spirits with sugar and water as the severity of the case requires.

QUININE.

AS QUININE is one of the most important of all drugs, any researches which throw light upon its action are of such general interest as to warrant close attention. One of the most important questions connected with the drug is as to the rate of its elimination, and we finally seem to be reaching firm ground for a positive conclusion. It is certain that it rapidly appears in the urine. Briquet long ago asserted that it could be found in that secretion half an hour after its ingestion, and the present year this has been confirmed by Dr. Prior (*Pflueger's Archiv.*). Its final escape from the body is not, however, so rapid, since Yvon, De Renzi, and Dietl have each found it in the urine from six to eight days after the ingestion of the last dose. The evidence seems, on the other hand, sufficient to prove that for the purposes of clinical medicine we must consider that after a single dose, or a single day's administration, the alkaloid is practically eliminated in 48 hours. It is true that Binz in six experiments recovered from the urine of the subsequent 48 hours, only two-thirds of the amount administered, but Dr. L. Shaw secured out of 4.46 grammes 4.3 grammes, leaving only 0.1586 grammes unaccounted for; and Welitschkowski recovered 65 per-cent the first day and 25 the second day, losing only 10 per-cent. Prior found in most cases that no quinine could be detected in the urine after 48 hours As it is probable some of the quinine escapes from the body by channels other than the kidneys, and also that it is to some extent destroyed in the body, these later results are very significant. Moreover, it is plain that some of it must be lost during the processes of its recovery from the urine, the loss being in inverse proportion to the skill of the chemist.

The researches of Dr. Shaw indicate that about half the quinine escapes during the first six hours, and the observations made by him and by Welitschkowski, that diseases of the kidney, great depression of the circulation from organic heart affection or other causes, and low fevers lessen the rate of elimination, are certainly of great practical importance. More of the alkaloids may under these circumstances be eliminated during the second than during the first 24 hours.

Absorption from the stomach occurs more rapidly when quinine is in solution than when in pill, and our present knowledge seems to show that the maximum effect, or at least the maximum proportion of the alkaloid in the blood, is to be expected about one hour after the administration of a solution. If a powder be given an hour and a half is probably the period ; and when the pill form is used the time stretches out in inverse proportion to the solubility of said pill. In fevers and other severe bodily disorders this period of greatest efficiency may be greatly prolonged.

We have now good ground for believing that quinine directly or indirectly has a marked tendency to check tissue-waste. Ranke was the first to assert that the alkaloid limits the throwing off of uric acid, a conclusion which was confirmed in 1862 by Dr. H. V. Bosse (Inaug. Dis. Dorpat), and in 1870 by Dr. G. Kerner. The latter observer found that 9 grains of quinine would diminish the excretion of urea one-eighth, and of uric acid one-half, while 38 grains decreased the total nitrogenous solids of the urine about one-fourth. In Zuntz's experiments 25 grains of the alkaloid lessened the elimination of urea about 40 per-cent., whilst in those of A. Schulte 1.8 grammes caused a fall of 39 per-cent.

In the recent elaborate study made by Prior the influence of the quinine was very pronounced, and as the experiments are quite fresh and appear to have been made with great care, we append the tabulated results:

Urea.	Uric Acid.	Sulphuric Acid.	Phosphoric Acid.	Nitrogen in Feces.	
39.76	0.74	2.50	3.68	0.67	Normal excretion.
32.7	0.12	2.00	3.17	0.43	1.5 grm. muriate of quinine.
37.0	0.52	2.13	3.40	0.34	After influence of above 1 5 grm.
38.4	0.62	2.29	3.42	1.13	
39.5	0.71	2.28	3.43	0.54	
35.6	0.34	1.98	3.04	0 41	1 grm. quinine.
32.4	0.17	1.76	3.00	0.02	1 grm. and after influence of day before.
31.2	0.09	1.18	2.67	1.11	1.5 grm. and after influence.
36.2	0.47	2.12	2.76	0.60	After influence of above quinine.
38.0	0.72	2.32	2.98	0.54	
39.6	0.75	2.49	3.37	0.32	
35.4	0.60	2.01	3.19	0.89	4 times 0.25 grm. quinine.
34.3	0.42	1.99	3.11	1.03	4 times 0.25 grm. quinine and after influence.
32.3	0.21	1.21	2.98	0.83	5 times 0.25 grm. quinine and after influence.
37.5	0.42	2.27	3.21	0.74	After influence of previous quinine days.
38.7	0.70	2.50	3.49	0.93	
39.8	0.76	2.49	3.65	0.73	
28.1	0.07	1.24	2.12	0.93	4 grm. quinine.
36.9	0.48	2.11	3.00	0.94	After influence of previous day.
37.9	0.52	2.36	3.60	0.21	
39.6	0.78	2.48	3.64	1 00	

Experiments have been made upon dogs by Rabuteau and by Hermann Von Bœck, and they are in accord with the results which we have already cited, and Jerusalimsky also noted in Salkowski's laboratory at Moscow that quinine depresses nitrogenous elimination.

These studies upon man and the lower animals would seem to have settled the question, but as is usual there is evidence upon the other side. Unruh (Virchow's Archiv. 1869, xlvii. 227), found that the alkaloid generally lessened nitrogenous elimination, but that such action was not constant, and in the trials of H. Oppenheim the secretion of urea was increased.

We have no light upon the problem whether this influence of quinine upon tissue waste is direct or indirect. If indirect it would be almost of necessity variable, but considering the intricacy of the subject it must be granted that the results of various experiments are remarkably uniform in showing habitual lessening of nitrogenous elimination and that there is at present a strong probability that quinine acts directly upon tissue waste. Every clinician knows that quinine in any dose which it is proper to give, will often fail to reduce the bodily temperature, whereas when conditions are favorable its influence is pronounced. And in this connection the experiments of Unruh upon men suffering from fever are very interesting, for he found that sometimes quinine depressed the elimination of urea; sometimes it had no apparent action, and sometimes appeared even to increase the throwing off of the waste products.

THE PHYSIOLOGICAL ACTION AND THERAPEUTIC APPLICATION OF BORACIC ACID.

BORACIC acid is one of the valuable agents of the antiseptic method, particularly from its freedom from all irritant properties. It may, therefore, be employed in the antiseptic treatment of the transparent media of the eye, cases in which the use of carbolic acid would be entirely inadmissible. Its value in certain diseases of the ear and as an injection (2 parts to 60 of water) in vesical troubles accompanied by decomposition of the urine, is well known.

Although both the acid and its salt, borax, are enormously used in the arts and to a considerable extent in practical medicine, yet we have very little definite knowledge as to their physiological action; to fill up this hiatus Dr. F. E. Stewart recently performed in the laboratory of the University of Pennsylvania, under the supervision of Dr. H. C. Wood, a number of experiments, whose results are worthy of being put on record. An experimental difficulty is the insolubility in water of the acid and its ordinary salt; this was in part obviated by the use of the quadroborate of sodium which was found to be much less soluble in water, than is stated in Gmelin's Chemistry. Enormous doses of the drug were required to produce death in the frog The notable symptoms were simply a progressive loss of muscular power and of reflex activity. So long as voluntary movement remained the poisoned batrachian showed evidences of sensation when disturbed, and there was not at any time any apparent anæsthetic influence.

The respiration ceased before the heart's action, and the drug may therefore be considered as a respiratory poison, but that it is not entirely without influence upon the frog's heart was shown by the fact that in some experiments a saturated solution of the quadroborate applied to the exposed heart arrested its action in five minutes, although in other trials a much longer time was required.

Our knowledge as to the action of this remedy has also been recently extended by M. C. BAUMFELD in his inaugural thesis at Paris (*Thése de Paris*, 1884), in which he demon-

strates its great antiseptic value and energy as a disinfectant and parasiticide,and as a dressing for wounds of mucous surfaces. Eczema and impetigo in children, and intertrigo are rapidly relieved by boracic acid, either in powder mixed with starch or as an ointment.

As a powder mixed with starch it also serves to destroy the odor from the axillæ or feet, though here, as in all cases in which boracic acid is applied to the skin, it should be certain that it is perfectly free from mixture with other acids, particularly sulphuric or hydrochloric, otherwise irritant instead of calming effects will be produced.

The following formulæ are recommended for an ointment of boracic acid:

℞ Pure boracic acid, 1 part.
White wax, 1 part.
Paraffine, 2 parts.
Almond oil, 2 parts.

Melt the wax and paraffine by heat together with the oil and mix thoroughly, in a warm vessel, with the boracic acid.—(Lucas Championniére.)

℞ Oil of sweet almonds, 210 parts.
Paraffine, 60 parts.
White wax, 30 parts.
Boracic acid, 60 parts.

An ointment can be made in this manner which can be readily applied on muslin.—(Lejeune).

CONVALLARIA.

ONE great danger which besets the teacher and worker in therapeutics is oversanguineness, and as quite recently the subject of the action of lily of the valley has been viewed somewhat *couleur de rose*, we have thought it worth while to lay before our readers an epitomé of what has appeared about the drug in the European journals since the appearance of our American textbooks.

On the physiological side of the question, we have in the *Bulletin Gén. de Thérap.* cv. 494, the record of a very incomplete and partial study of the action of preparations of convallaria made upon frogs and other cold-blooded animals, by Drs. Coze and Simon, of the Nancy Medical School. They find that the heart-beat is slowed and the pulse wave enlarged, as by digitalis; and assert that the increase of the pulse wave is greater than with digitalis, and that there is never irregular arrest of the cardiac pulsations, as with the latter drug.

A very much more important paper is that of G. Leubuscher, (*Zeitschrift f. Klin. Med.* VII. 582). He used convallamarin and found that in doses of 0.0095 gramme it produces in the frog progressive paralysis, at first with cramp-like tremblings, and finally complete loss of reflex activity. Death occurs in from half to three-quarters of an hour from systolic cardiac arrest. A very marked feature before the arrest of the heart is great derangement in its rhythm—the regular contraction of ventricle and auricle being completely destroyed. The frequency of the beat was in most cases, but not always, at first lessened. Atropia did not set aside the action of convallaria.

In cats, rabbits, and guinea pigs the fatal dose was found to be, respectively, 0.008, 0.0075, 0.004 grm. The chief symptom was violent convulsions, beginning in muscular tremblings. Death occurred in one-half to one and one-half hours, from diastolic arrest of the heart, the organ being relaxed and full of blood. Studies upon the blood pressure yielded results seemingly in direct opposition to those obtained by Prof. Sée. There was no primary rise in the arterial pressure. Various doses were used, but in no case was the arterial pressure increased, and there was usually no increase of the pulse-rate, only a gradual slowing of the heart with a progressive fall of the arterial pressure. The vagus had its excitability primarily somewhat increased, but finally destroyed. There was no effect upon the respiration.

A comparison of the results thus obtained by Leubuscher shows an irreconcilable discord between them, and those of Sée, Isæw and Ott, and it seems not unlikely that the various observers have been experimenting with different principles under the one name.

Upon the clinical side of the question discord also reigns. Pel (*Centralb. f. Therap.*, 1883, 2), found the drug to fail him in a case of weakened left ventricle from kidney disease, and also to be wanting in diuretic power; but believes it to be of some little value in failure of compensatory power in cardiac disease. Dr. Leyden (*Deutsch. Med. Woch.*, Feb. 1883, 125), has tried in several cases at his clinic both the extract and the infusion of convallaria, without good results. Dr. B. Stiller, in 21 cases at the Medical Clinic of Pesth, obtained good results only twice. He employed the infusions of Jacobi (*Sitzungs. des Vereins f. klin. Medizin*, 1883), and also Lubitenski, and found the remedy

to be of little or no therapeutic value, in which G. Leubuscher fully agrees, asserting indeed that it often does harm. A similar negative result was arrived at by Darieux (*Prog. Méd.*, 1883.)

On the other hand in the experience of Prof. Silverstein at his clinic in Parma, the convallaria has been of great service in the same class of cases as digitalis is used in (*La France Méd.*, Oct. 1883). He uses the extract in doses 0.08 grm., given every two hours. The Russian Kalmikoff, an abstract of whose article has already appeared in the THERAPEUTIC GAZETTE, had good success with the remedy.

Dr. E. Maragliana (*Centralb. f. d. Med. Wissensch*, 1883, 43), finds that the lily of the valley raises the arterial pressure and very generally without affecting distinctly the rate of the pulse or respiration. In most instances there is a marked diuretic effect. In its action upon the kidneys convallamarin is much more active than either the extract or convallarin. In mitral disease with failing heart power he considers it even superior to digitalis, in that it has no cumulative influence. He administers as the daily dose fifteen to thirty grains of the extract Kalmikoff of convallarin and of convallamarin, four to fifteen grains.

ELIMINATION OF STRYCHNIA.

THE question of the elimination of strychnia is an important and interesting one, both to the therapeutist and the toxicologist. Very many chemists have failed to detect it in the tissues or secretions of men or animals poisoned thereby, and Plugge believes that the alkaloid is oxidized in the system and converted into an inert substance, as quinine was found by Kerner to be converted into dehydroxle-quinine (*Arch. f. gesammt. Physiologie*, Bd. II and III). On the other hand, Ogston, Anderson, Adam, Schultzen, Rodgers, Gerwood, Husemann brothers, Dragendorff, Wormley, etc., have detected the alkaloid in the blood, tissues and secretions of animals poisoned by it. The subject has recently been re-examined by Peter von Rautenfeld (Inaug. Diss. Dorpat, 1884), and he abundantly corroborates the assertion that the alkaloid is eliminated unchanged, and may be obtained in a crystalline form from the urine.

It is, however, not at all improbable that a portion of the strychnia is oxidized in the organism.

Reports on Therapeutic Progress.

THE THERAPEUTIC APPLICATIONS OF CAFFEINE AND ITS PREPARATIONS.

For the past year PROF. F. RIEGEL (*Berliner Klin. Woch.*, xxi, 19, 1884), has been conducting experiments at his clinic with caffeine, already recommended by Houchard and Lepine as a heart-regulating drug, and comes to the conclusion that caffeine is a heart remedy which deserves to be classed with digitalis, and in some cases is even preferable to it. The fact that this drug has previously attracted so little attention in this connection is explained by Riegel as due to the facts that it has always been given in far too small doses, that it is very insoluble, and that its preparations are readily decomposed. This latter objection, as pointed out by Tanret, may be overcome by combining the caffeine with soda salts of benzoic, cinnamic, or salicylic acids. These double salts are soluble in two parts of boiling water, and remain in solution after cooling, so that the subcutaneous administration of caffeine in suitable doses is thereby rendered possible. Most of Riegel's experiments were made with these salts, though the hydrate and crystalline hydrobromate were also employed.

In healthy individuals the subcutaneous injection of from seven to fifteen grains produces a decisive slowing of the heart with an increase in volume of the pulse; a reduction in blood-pressure was never noticed.

In the treatment of diseases caffeine was first given in cases in which digitalis was indicated, as in valvular disease where compensation was absent; and then in myocarditis; in fatty heart; in many cases of nephritis where there was reduction in the volume of urine; and finally in a case of pleurisy with effusion, where there was diminished diuresis and reduced blood-pressure; twenty-one cases in all.

In all of these cases favorable results were noticed and led to the formulation of the following conclusions:

1. Caffeine is a heart-regulating drug, with the same mode of action as digitalis.

2. In suitable doses it increases the power of the heart, slows the pulse, and increases arterial blood-pressure.

3. It produces a rapid increase in the excretion of urine.

4. The indications for its use are the same as those which govern the use of digitalis.

5. Caffeine is most efficacious in frequently repeated, small doses.

6. Its action differs from that of digitalis in that it is much more rapid and entirely free from the cumulative action which often complicates the results of digitalis.

7. Even in cases in which digitalis has proved of no service caffeine is nevertheless indicated, and its employment will often be accompanied by favorable results.

8. The simultaneous use of narcotics, especially morphia, with caffeine, is not to be recommended.

9. Caffeine, especially the easily soluble double salts above mentioned, is better borne than is digitalis.

Dr. C. Becher (*Wien. Med. Bl.*, vii, 21, 1884), is led by his investigations to conclusions similar to those of Riegel. He employed the citrate of caffeine, the hydrobromate, and in some cases pure caffeine in cases of heart disease, in eight cases of pleurisy with effusion and in four cases of nephritis. The single doses employed were from three to seven and one-half grains of the citrate or hydrobromate, while as much as ten to twenty or even thirty grains were given in twenty-four hours. Pure caffeine was given in much smaller quantity, one and one-half to three grains representing single doses, and six to ten grains the amount given in twenty-four hours.

In the majority of the 34 cases observed by Becher, caffeine produced an increase in the power of the heart's contractions, a higher pulse wave and increased tension of the peripheral arteries. The reduction in the rate of the pulse produced by caffeine is, according to Becher, not as marked as that due to the action of digitalis, though the reduction may amount to ten or twenty beats in the minute. On the other hand, under the use of caffeine in sixteen cases, the amount of urine increased from one and one-half to three times its normal quantity.

Pure caffeine is not as well adapted for use as the different salts, as in three cases it refused to be tolerated on the second day of its administration. The unfavorable symptoms produced by caffeine are of very rare occurrence. They may be headache, giddiness and vomiting.—*Schmidt's Jahrbücher*, Oct. 21, 1884.

The two following formulæ are proposed by M. Tanret (*Jour. de Méd. de Paris*, Nov. 1, 1884), for making a stable preparation of caffeine with benzoate or salicylate of soda; the first contains 48.8 per cent. of caffeine and the second 61. per cent.

℞ Benzoate of Sodium, gr. xlvii.
Caffeine, gr. xl.
Distilled Water, ʒ iss.

Sixteen drops of this solution contain about four grains caffeine.

℞ Salicylate of Sodium, gr. xlviii.
Caffeine, gr. xli.
Distilled Water, ʒ iss.

Dissolve with the aid of heat. Sixteen drops contain about seven grains of caffeine.

TRAUMATIC TETANUS TREATED BY ESERINE AND LOCAL WARMTH AND MOISTURE.

Dr. G. H. Brandt reports in the *Practitioner*, Oct. 1884, a case of tetanus which, after exposure to cold, followed a slight cut of the thumb in a young man of rather delicate constitution. The wound was dressed with carbolized oil and healed perfectly well, but ten days later the patient contracted a severe cold, accompanied by general stiffening of the muscles of the legs, back, chest, throat and masseters, with great restlessness and insomnia. Bromide of potassium and chloral were given in fifteen-grain doses during the day and morphine subcutaneously at night, but did not prevent the onset of convulsions, which became more and more frequent and violent. Eserine was then injected subcutaneously every hour, first in doses of $\frac{1}{100}$ and then of $\frac{2}{100}$ grain, accompanied by an ice bag to the spine, but produced no apparent relief of the symptoms, and morphia was still required to procure rest at night. The thumb was then kept covered with warm, moist cloths, and the use of eserine internally persisted in for three days in $\frac{1.5}{100}$ grain doses at first every hour, and then at longer intervals, continuing the use of the ice bag and morphia at night. At the end of the third day improvement was well marked ; there was less rigidity, less sweating and better nights. At no time was his power of deglutition seriously disturbed. The calabar bean was then stopped, and potassium bromide again given three times daily, with morphia at night. Three weeks later convalescence was complete, with the exception of slight stiffness and pain in the groin and lumbar region. Chloroform was also employed to shorten the convulsions.

THE ACTION OF ANTIPYRIN.

In the *Prager Medicinische Wochenschrift* for Oct. 1, 15 and 22, 1884, PROF. PRIBRAM publishes the results of his studies with this new antipyretic. Chemically, it is described as *dimethyl chinicin*, and is a yellowish powder extremely soluble in water or alcohol, and, therefore, well adapted for subcutaneous injection; with a bitter taste very much less marked and less disagreeable than that of quinine, of which it is a derivative. Antipyrin has been used with success as an antipyretic by Pribram in typhoid fever, pneumonia, erysipelas, tuberculosis, acute rheumatism, and various other acute febrile diseases in doses of from 10 to 30 grains, administered in powder or in watery solution. As a rule, not more than 60 grains should be given during one day, although in typhoid fever much larger doses may be given with impunity. The only unfavorable result which he mentions, as a consequence of the use of this drug, is occasional vomiting. His conclusions are as follows :

1. Antipyrin is an invaluable means of reducing the temperature in fever and its concomitant symptoms (rapid pulse and respiration, dryness of the tongue and delirium).

2. These favorable results are produced in cases in which quinine has either failed, or in which it is only active in very large doses.

3. It further possesses an advantage over quinine in its great solubility.

4. It is well suited for administration by the rectum.

5. It is preferable to the cold water treatment of fevers on account of its ready employment and easy control.

6. It surpasses kairine in the duration of its effects, and its action is free from the danger of collapse and rigor which often follows the use of kairine.

7. Antipyrin appears to be of special value in the treatment of typhoid fever, tuberculosis and pneumonia.

8. In acute rheumatism it appears to be as efficacious as salicylic acid.

9. Its use in advanced cases of tuberculosis tends to diminish the loss of body weight ; it has, however, no effect on the sweats of phthisis.

10. The only unfavorable results so far noted are occasional vomiting and the production of an exanthematous eruption. Collapse occurred in one case in which it was employed, not, however, distinctly due to this drug. Caution is, however, advisable in cases of cardiac weakness.

The testimony of numerous other observers (*Schmidt's Jahrbücher*, Oct. 21, 1884, p. 127) is in harmony with these results. In all cases of febrile diseases (pneumonia, scarlatina, typhoid fever, relapsing fever, measles, erysipelas, pleurisy and phthisis) it produced a marked reduction in temperature, which may be prolonged for from 10 to 20 hours ; the pulse and respirations are also reduced in frequency, and no abnormal alteration occurs in the urine. After extended trial at the hands of several physicians, the only objection that can be urged against antipyrin is that it occasionally produces vomiting ; but this, according to RANK, may be avoided by administering it subcutaneously. So given, its effects are perfectly sure and more rapid, and never cause any general or local disturbance.

DR. FALKENHEIM has also employed antipyrin in the treatment of intermittent fever, but without effect. Antipyrin appears to be a powerful antipyretic, but possesses no value as an antiperiodic.

Sometimes, however, as noticed by DR. ERNST (*Bull. Gén de Thér.*, Oct. 30, 1884), antipyrin produces a peculiar exanthematous eruption. This eruption was first noticed by Dr. Ernst after the administration by the mouth and rectum of 330 grains of antipyrin to a boy ten years of age ; there could be no question as to the cause of the eruption, for it was also seen in a woman aged 67 years, suffering from an entirely different disease, and, in both cases antipyrin was the only remedy given. It also appeared in three other cases, two of typhoid fever, one of diphtheria and one of erysipelas, treated by this remedy.

The eruption is composed of irregularly circular, reddish spots, somewhat similar to the eruption of measles. As the eruption is confluent, the reddish patches, separated by intervals of healthy skin, give the appearance of reddish marble. On pressure the red color disappears and leaves a brownish pigmentation. After an eruptive period of about five days, during which the eruption continues to extend, but without increasing much in intensity, the red color gives place to a brownish tint, which does not disappear on pressure with the finger. Traces of this exanthema may be seen for as long as two weeks.

As regards the seat of the eruption, it is most marked on the chest, the back and the belly ; in other words, on the trunk, but it does not appear to be more intense on parts

subjected to pressure. The face and upper part of the neck are always exempt; it, however, is to be seen on the limbs, especially on the extensor surfaces. The palms of the hands and soles of the feet do not entirely escape.

The average diameter of the patches was about ⅓ inch, varying from ½ to ⅔ inch, according to the degree of confluence. Itching is not always complained of. The eruption disappears in spite of the continued use of antipyrin; the treatment of the fever need not, therefore, be interrupted.

THE ACTION OF EUONYMIN (WAHOO).

Euonymin (Wahoo) a resinous mixture prepared by precipitating with cold water an alcoholic tincture of the bark of euonymus atro-purpureus is well-known as a gentle and reliable laxative. It has recently been made the subject of study by M. Conil (*Thése de Paris*, 1883), who obtained the following results:

Euonymin acts on the intestines, not as a hydrogogue,but by causing contraction of the muscular coats of the bowels; and while being a laxative and cholagogue (Rutherford) it is by no means a violent purgative, but causes one or two gentle evacuations of the bowels within a few hours after its administration. Occasionally it causes colicky pains, but this unpleasant result may be readily avoided by combining it with some preparation of opium. The proper dose is from one and one-half to five grains, and when once susceptibility to its action has been lost, as is apt to occur after a couple of weeks of constant use, nothing will be gained by increasing the dose.

THE OPERATIVE TREATMENT OF HEPATITIS AND HEPATIC ABSCESS.

In the *Yellow Book* issued by the Inspector General of Customs for the Chinese Empire, for 1884, Dr. Patrick Manson publishes a valuable paper on the treatment of hepatitis, in which he details a line of treatment by which the termination of hepatitis in abscess may often be prevented, and if abscess has already formed, by which it may be cured. Not many years ago, to tell a patient he had abscess of the liver, was nearly tantamount to telling him he was about to die, and for the multiple hepatic abscesses of pyæmia and dysentery, the present state of affairs is about as bad. But since the introduction of the aspirator, drainage tube and Listerism the chances of recovery in genuine tropical and unilocular abscess, by early and judicious operation and proper after-treatment, have greatly improved.

The successful treatment of abscess or threatened abscess, particularly in such an important organ as the liver, depends often upon its early recognition; for if left unopened the loss of glandular tissue which it occasions may be enough to deprive the economy of the use of an essential organ, and the longer the abscess is in existence, the greater the risk of rupture in some untoward direction, and the greater the risk of pyæmia, hectic and diarrhœa.

Unfortunately there is no pathognomonic sign of the existence of hepatic abscess. But systematic use of the thermometer in suspected cases; frequent percussion, mapping out and measuring of the hepatic dullness; the use of the stethoscope along the upper border of the liver in the search for pneumonic crepitus, pleuritic friction or peritoneal friction; inspection of the tongue and excreta; the decubitus of the patient; the state of his skin and respiration; and his mental condition; these, with the history of the case, will generally lead to a correct diagnosis.

The old classical picture of hepatitis is entirely wrong. In a few cases symptoms may be urgent and unmistakable, but in the great majority of cases so little urgent are general and local symptoms, that often a patient with abscess actually existing in the liver will declare that he does not know that he has such an organ. Often the only subjective symptom is a feeling of illness. But when a patient is met with who has been out of health for some weeks, and whose range of temperature is from 100° F. in the morning to 102° F. in the evening and whose liver is only slightly enlarged, and whose symptoms do not yield to remedies, if that patient has been resident for some time in a hot climate, liver abscess ought to be suspected. The indications, then, are the same as in the treatment of abscess wherever found, *viz:* early and free discharge of its contents. In earlier times the danger from free incisions of the liver, the possibility of escape of pus into the abdominal cavity, the danger of putrid suppuration and gangrene added to the difficulty of exact localization, all combined to give operative interference a poor chance of success. But now it is quite otherwise. An abscess can be diagnosed long before it points; a free opening can be secured and maintained, and we can prevent the putrefaction of the abscess contents.

There is, therefore, now no reason why hepatic abscess should not be treated like abscess elsewhere.

When once the diagnosis is made, the temptation to delay should be strenuously resisted; and the plan of operation submitted by Dr. Manson, while fulfilling all the indications in the treatment of deep-seated abscess, is so simple that it should help to allay the anxiety of the inexperienced surgeon brought face to face for the first time with a case of hepatic abscess. The operation can be performed with an ordinary operating case, but it is better, if possible, to have the following instruments specially made:

1. A long, large-sized trocar provided with two eyes firmly soldered to the flange end of the canula. These eyes are for the accommodation of the fore and middle finger in withdrawing the instrument. Length of canula advisable, four inches; diameter, three-eights of an inch.

2. A steel stilette, 18 inches long and about one-eighth inch in diameter, with a small eye at one end to take a string.

3. Eight or ten inches of stout rubber tubing with a bore of at least one-quarter inch, and an outside circumference considerably greater than that of the canula. About three inches of one end of the tubing is perforated with large holes like an ordinary drainage tube; a stout silk string is run through the other end.

4. A silver cap or plug with a neck bored so as to fit loosely on to the end of the stilette and also allow the drainage tube to be firmly attached. The diameter of the cap must be less than the calibre of the canula.

5. A piece of silver tube about two inches in length, having a bore just sufficiently large to admit with ease the rubber tubing.

6. A piece of stout Macintosh, 18 inches by 14 inches. Carbolized gauze. These are firmly attached to the silver tube, a hole being cut in the centre of the Macintosh and squares of gauze sufficiently large to admit the tube. These dressings are so lashed that one end of the tube is just flush with the inner surface of the gauze, and the Macintosh lies on the outer side of the dressing.

7. Six feet of India-rubber tubing, having a bore of at least five-eighths inch.

Before commencing the operation the perforated end of the rubber tubing is tied on the neck of the silver cap. The stilette is run through the tube and its end lodged in the depression made to receive it in the cap. The silk ligature at the free end of the tubing is drawn through the eye in the stilette and by means of it the tubing is stretched so that its diameter is diminished sufficiently to allow it to traverse the canula; the ligature is then firmly tied, maintaining the tube on the stretch.

When these preparations are completed and all instrument and dressings and the patient's side made aseptic, the patient anæsthetized and the carbolic acid spray turned on, the diagnosis is confirmed and the exact location of the abscess determined by the aspirator needle, three or four punctures being made if necessary. After pus has been detected the needle is withdrawn, an incision made in the skin and the trocar pushed boldly in until the cavity of the abscess is reached, and the trocar withdrawn, leaving the canula in position. The pus will then freely discharge through the canula. When matter ceases to flow the rubber tube, mounted on the stilette as described, is pushed through the canula until the silver cap is felt to impinge on the posterior wall of the abscess cavity. While one hand gently, but firmly, holds the stilette in position, the other carefully and slowly withdraws the canula from the side of the patient, the finger gaining the requisite purchase for the very considerable pull and half-rotating movement required, from the eyes on the canula. The rubber tube is now tightly grasped by the tissues and its perforated end lies in the abscess sac. While it is still firmly held at the bottom of the sac, the string keeping the tube stretched is cut, and the elasticity of the rubber causes it to resile toward the fixed abscess end, and expanding, firmly to block the wound in both liver and abdominal wall. The peritoneum is thus bridged across and pus flows freely through the tube without any risk of escape by the side. The stilette is then withdrawn, and the dressings, already prepared as described, applied, the end of the rubber tube being passed through the silver tube to which the gauze and Macintosh are applied. These dressings may be kept in contact with the skin by means of broad roller bandages passing around the body.

After these preparations have been completed, the drain and metal tube in which it lies are received into one end of the long thick rubber tube, which is firmly tied on to the metal tube at one end. It has already been filled with carbolic acid solution, which is prevented from running out by clips or strings. The free end is now placed in a wide-mouthed bottle of about two-ounce capacity, filled with carbolic acid solution and

firmly secured in it. The strings are now cut, and the end of the tube, with small bottle attached, is placed in a large bottle containing carbolic acid solution. The syphon is then complete, and the abscess contents are discharged, as soon as formed, by the tube into the bottle. By raising or depressing the bottle the amount of suction may be increased or diminished as desired; a fall of about 18 inches is generally sufficient to ensure a steady drain. The object of the small bottle is to prevent entrance of air into the tube when the large bottle is emptied of discharge from time to time. The small bottle must never be untied, but is lifted out with the tube when the larger bottle is cleaned.

When the operation is complete a hypodermic injection of morphia should be given and a watch set to see that the tube does not become kinked or disturbed. As no discharge can pass by the side of the tube, the dressing will not need, ordinarily, to be disturbed for a week or more; but if the discharge suddenly ceases, or the patient's temperature rises, the dressing should be removed and the tube examined for kinks. With a large tube as recommended there is comparatively no danger of its becoming clogged. All changes in the dressings and re-adjustment of the tube should be made under the carbolized spray. When the tube becomes loose in the wound, it may be withdrawn and a smaller one substituted in the same manner as at first; this can be readily slipped into the wound if done at once. When the discharge becomes inconsiderable the syphon arrangement may be dispensed with and the drainage tube allowed to discharge into ordinary antiseptic dressings.

The advantages claimed for this operation are that it is easy; no skilled assistance is required; it is bloodless, and is applicable to both deep and superficial abscesses. By the syphon action the most dependent portion of the sack is drained; antiseptics are easily and thoroughly used; the dressings need very rarely be changed; plugging of the tube is prevented by the constant suction; the clothing and dressings are never soiled; and no pus can escape into the peritoneum, while the flexible tubing inflicts no injury on the liver tissue in the constant motion of respiration.

It is further claimed that even if no matter be found in aspirating, the needle will often serve to cure a hepatitis and prevent the formation of an abscess. The recognized method of the treatment of inflamed lymphatics and testicle seems to confirm this view, and Dr. Manson relates a case in which puncture of the liver appeared to prevent an impending hepatic abscess. Uncertainty as to the presence of pus need not, therefore, stand in the way of this preliminary step of the operation, for even if no pus is found no harm need be done, but rather benefit conferred.

THE SIMULTANEOUS USE OF VARIOUS BROMINE SALTS IN THE TREATMENT OF EPILEPSY.

ERLENMEYER has recently published his experience with the bromine salts of potassium, sodium, ammonium, and lithium, which have a percentage of bromine of respectively, 68, 80, 88, and 92, and formulates his conclusions in the following sentences:

1. All four of the above are equal in antispasmodic and sedative action, and no one is to be preferred to the other.

2. No one of these, after its use has been discontinued, prevents the recurrence of epileptic attacks.

3. The bad effects of the potassium salt on the heart, blood vessels, and respiration, is absent when other salts are employed.

4. Any one of the above salts may produce the characteristic bromine acne, which, however, disappears when equal doses of one of the other salts is substituted for the one originally employed.

This fact led Erlenmeyer to administer the bromine salts in combination with each other, with the following results:

1. The combination of potassium bromide, sodium bromide and ammonium bromide, in the proportion of 1:1:½, works much better than any one salt in the same or in even larger doses. It is not possible that this result is dependent upon a higher percentage of bromime, since 150 grains of this mixture contain less than 120 grains of bromine, and therefore a smaller percentage than is possessed by a single one of the above salts. The symptoms of venous stagnation which follow the prolonged use of this combination is due to the ammonium salt, and disappears when the quantity of the latter in the above formula is reduced one-half.

2. With this combination Erlenmeyer has succeeded in not only arresting attacks of epilepsy, but in preventing their return when the treatment has been suspended.

3. Acne produced by the action of any individual bromide disappeared under the use of the combined preparation, even though it contained the salt originally administered.

4. Acne was never observed as a result of the use of the association of various bromine salts.

In order to prevent bad effects of the bromides on digestion, in addition to its administration in carbonic acid alkaline water, Erlenmeyer had a preparation of bromine water prepared which, in 25 fluid ounces of carbonic acid water with soda, contained 60 grains of potassium bromide, 60 grains of sodium bromide, and 30 grains of ammonium bromide, with the addition of about one drop of ammonia to neutralize the usual acid reaction of the latter salt. This bromine solution remains clear for months, and preserves its alkaline reaction for an extremely long time; no free hydrobromic acid develops in it, as proved by the fact that methyl violet (1:100000) is not discolored by it.

In its administration at first only half such a bottle is used daily, but the quantity may be rapidly increased until an entire bottle can be drunk after dinner. Its use must be persisted in until distinct symptoms of bromine intoxication appear, such as sleepiness, mental obtuseness, muscular weakness, and uncertainty of movements and speech. When these symptoms appear the dose should be reduced one-half for three days, or else suspended entirely; with nourishing diet and baths, these symptoms then rapidly disappear.

Ellenberger has used this bromine preparation for a year with good effect in epilepsy, epileptic psychoses, hysteria, hysterical headache, nocturnal terrors, neurasthenia with spermatorrhœa, hemicrania, and sleeplessness after the withdrawal of morphia, though only in epilepsy and hemicrania is it necessary to push the dose up to the production of toxic symptoms.—*St. Petersburger Med. Wochenschrift*, Nov. 1, 1884.

THE TREATMENT OF INTRA-UTERINE DISEASE, WITH SPECIAL REFERENCE TO THE BEST MODE OF MAKING APPLICATIONS TO THE INTRA-UTERINE SURFACE.

Dr. Lombe Atthill opened the discussion on the above subject in the Section of Obstetric Medicine at the fifty-second annual meeting of the British Medical Association, with a thoughtful paper aiming at the extension of the principle of the treatment of diseases of the lining membrane of the uterus on the same general principles which have been found efficacious where other mucous membranes are similarly affected. Though these principles have for some time been recognized as sound, the plan of topical treatment has come somewhat into disrepute from the want of proper care in selecting suitable cases and in lack of observance of suitable precautions. Dr. Atthill's paper deals not only with the discussion of the relative value of the different therapeutic agents, and the best modes of applying them, but with a clear outlining of the conditions which demand the direct application of medical agents to the intra-uterine surface. These may be summed up as follows: All affections of local origin giving rise to profuse menstruation, metrorrhagia, or uterine catarrh, or in which hyperæsthesia of the nerves distributed over the surface of the inner surface of the uterus exists. Polypi, or tumors capable of being surgically treated, are excluded; but certain forms of recurrent growths, and of malignant diseases, are to be included in the category of affections capable of being benefited by this mode of treatment.

It must be borne in mind that by "local origin" is meant all affections depending on an unhealthy condition of the uterine walls, and of the mucous membrane lining the cavity, or that membrane alone; for if symptoms dependent for their origin on affections of the ovaries or fallopian tubes be treated by applications made to the intra-uterine surface, serious injury may come to the patient. Of all the drugs which have been or may be used for local application to the intra-uterine surface, Dr. Atthill gives the preference to carbolic acid, either alone or combined with iodine; and he gives the following summing up of the conclusions at which he has arrived, as the result of a very extended experience in the use of various agents in the local treatment of such affections.

1. Carbolic acid, in the proportion of one part of spirit to two of the acid, is the safest and most generally useful of all the agents employed.

2. Carbolic acid should always be applied by means of a probe, round the point of which a layer of cotton is rolled, the cotton being carried up to the fundus at least twice on each occasion that the applications are made, which should be on every third or fourth day, till marked improvement takes place.

3. Carbolic acid should never be injected into the uterus, except when combined with iodine, in the form known as iodised phenol.

4. In many cases, iodised phenol may with advantage be applied by means of a probe.

5. In cases in which metrorrhagia or profuse menstruation occurs, depending on an un-

healthy condition of the intra-uterine mucous membrane, the cavity being dilated and the uterus enlarged, from half a drachm to a drachm of iodised phenol may be injected with great advantage.

6. In cases in which epithelioma attacks the mucous membrane of the cavity, the injection of iodised phenol promises better results than any other treatment.

7. The success likely to follow the injection of iodised phenol renders the dilatation of the uterus, the use of the curette, and the subsequent application of fuming nitric acid, less frequently necessary than has been the case hitherto.

8. The injection of iodised phenol requires to be carried out with so much care that it should never be injected except by means of a syringe which will not contain more than one drachm.

9. The use of the fuming nitric acid should be limited, as a rule, to those cases in which dilatation has been practiced, and it should always be applied through a tube inserted into the cervix uteri for the purpose of protecting the sides of that canal from the action of the acid.

10. The pain produced by the application of any medical agent to the intra-uterine cavity does not bear any relation to the activity of that agent, but it does to one of two causes—either to hyperæsthesia, or to narrowness of the cervical canal, especially of the os internum.—*British Medical Journal*, Nov. 29, 1884.

THE ADMINISTRATION OF QUININE IN THE FORM OF SUPPOSITORIES.

Dr. R. Pick (*Centrbl. f. d. ges. Therapie*, Nov., 1884) recommends the use of quinine suppositories in children as a simple and easy method of administration, and one which, in the majority of cases, is followed by evidences of rapid absorption. It is advisable, though not essential, to wash out the rectum with injections of water before the use of the suppository; when this is done, at least half an hour or an hour should elapse between the injection and the insertion of the suppository, to increase the chances of its retention. Each suppository should contain at least 15 to 20 grains of quinine. In cases where they appear to irritate the mucous membrane, and are consequently not retained, a little opium may be added to the suppository, and they should be inserted as high in the rectum as possible.

[As the juices of the rectum are alkaline, it seems to us highly improbable that quinine suppositories should act promptly—unless, indeed, a dilute sulphuric acid be added to them in the proportion of at least one drop for each grain of the salt.—Ed.]

LOCAL TREATMENT OF SKIN DISEASES.

In his letter to the *Edinburgh Medical Journal* for October 1884, Dr. W. Allan Jamieson described a number of new devices for treating skin diseases exhibited at the recent International Medical Congress, at Copenhagen, by Dr. Unna. The first of these was what he calls "salve-muslin;" thin pliant rolls of muslin, or thin cotton, spread on one or both sides, very smoothly and perfectly, with various salves. These salves are so compounded that they do not run, and are thoroughly incorporated with the muslin. In this way pieces of suitable size, and containing ingredients suitable to the case, can be cut off and at once applied. They accommodate themselves to all the sinuosities and inequalities of the parts and at the same time adhere closely; those salve muslins, which are spread on both sides, and, therefore, contain a large quantity of the ingredients, are efficient for a longer time than those merely treated with the unguent on one surface.

Unna showed on a person present the way in which the zinc salve muslin, one of the most ordinarily applicable forms, can be fitted to the fingers or to the spaces between the fingers by making slits in the piece and then drawing it on; to the forehead, the cheek, and, wrapped around a tube of oiled paper, to the inside of the nose. Iodoform salve muslin can, in like manner, be applied to the glans penis. More adhesive, owing to a basis of gutta-percha or India rubber, the plaster muslins were next described; these are beautifully flexible and admit of close adhesion. Of these, the mercurial and salicylic plasters attracted the most attention.

The glycero-gelatines were next exhibited. These are soft and hard, and when employed are melted by means of boiling water in a vessel, in which the can containing the gelatine is placed, and when melted a layer is painted with a brush on the surface on which it is desired to make the application, and allowed to become hard. A formula for a generally useful one is:

℞ Zinci oxidi,
Gelatini puri, āā 10,
Glycerini,
Aquæ, āā 40.

This Unna recommends for eczema of the bend of the elbow. Pencils of iodoform were also shown, which, when dipped in water, could be used to touch a sore more or less lightly; and others made, like those recommended by Bulkley, by Mielk, of Hamburg, of adhesive substances which, heated in a flame and then pressed closely to the skin and pulled rapidly away could be used to replace depilating forceps.

ATROPINE IN THE TREATMENT OF ACUTE OTITIS IN CHILDREN.

Dr. Miot speaks very highly of the benefits derived from the employment of atropine in the treatment of acute rhinitis and otitis in children. In such cases there seems to be a special susceptibility to the action of this remedy, as sometimes even so small a dose as 7-1000 of a grain produces such marked dryness of the pharynx as to render deglutition of solids very difficult. Atropine is particularly valuable in aborting coryza, and should, therefore, be given as early as possible, and will then also serve in the majority of cases, by arresting the spread of the inflammation to the eustachian tube or tympanum, to prevent the occurrence of otitis, which so frequently accompanies acute coryza. Even if, however, the case be already complicated by ear-ache, atropine will often serve to overcome both troubles.

The following is his method of administration of atropine to children: One milligramme of neutral sulphate of atropine is dissolved in 80 grammes of distilled water, and two teaspoonfuls are given every three hours.

For adults also it is claimed to prove beneficial in similar affections; larger doses may, however, be given. Thus one milligrame of sulphate of atropine may be dissolved in 40 grammes of water and two teaspoonfuls given as above. This treatment should be persisted in for two or three days.—*Journ. de Méd. et de Chirg. Prat.*, No. 9, 1884.

PERITONEAL TRANSFUSION.

HAYEM publishes the deductions from the series of experiments, with which he has been long occupied, as to the absorption of blood injected into the peritoneal cavity (*Deutsche Medizinal Zeitung*, Oct. 30, 1884).

1. Blood injected into the peritoneal cavity is, in a short time, completely absorbed; the absorption is dependent upon the relative proportion of blood injected. In the dog, if the amount of blood injected is not more than $\frac{1}{30}$ of the body weight, one half is absorbed in twenty-four hours, while the remainder disappears within four or five days. If dog's blood is injected, absorption occurs without causing peritonitis; but when blood of other species of animals is injected, peritoneal inflammation is induced; in no case, however, was a fatal result noted.

2. Absorption takes place without the blood undergoing any morphological change, even when blood of different species is employed. If, coincident with the injection of blood, the animal is bled to a corresponding amount, the resulting anæmia rapidly disappears. If the transfusion is made in animals not already depleted by hemorrhage, a more or less marked plethora results, the degree depending upon the amount of blood injected.

3. The absorption occurs largely through the lymphatics of the abdominal cavity. This was proved by injecting dog's blood into the abdominal cavity of a deer, and then killing it as soon as the blood corpuscles of the dog were recognized in blood drawn from the ear. On then opening the abdominal cavity, the *ductus thoracicus* was found distended with reddish lymph containing innumerable dog's blood corpuscles; while the lymphatic glands and vessels of the peritoneum were distended with dog's blood, thus showing that the lymphatic glands offer no obstruction to the absorption of blood.

Hayem regards this method of performing transfusion as of equal value with the ordinary method, while it is much easier of performance, and free from many dangers which accompany the latter.

THE TREATMENT OF TYPHOID FEVER.

At the meeting of the German Scientific Association, at Magdeburg, a paper on the treatment of typhoid fever, based on an experience of seven years and a half, viz.: from March 1877 to September 1884, was contributed by PROF. EBSTEIN. (*Lancet*, Oct. 18, 1884). The total number of cases was 235, and they were treated in the medical clinic of Holstein. The mortality was only 5.5 per cent., and could be reduced to 2.5 per cent. by the exclusion of inevitably fatal cases. The author concludes that the so-called abortive treatment with calomel is useful, and is to be recommended. In the absence of any causal treatment, this can be only symptomatic —*i.e.* measures based on a consideration of the morbid phenomena and individual conditions.

Above all attention must be paid to judicious dietetic treatment and the maintenance of the nutrition of the patient. The control of high temperature, even if of long duration, is only called for when it is associated with severe cardiac or nervous symptoms, or when the temperature attains such a height as to threaten life. The principles of treatment enumerated are, says Ebstein, far more satisfactory in practice and in their results than an exclusive adoption of "bath-treatment," or other method of strict antipyresis. Baths he regards as of value for their powerful stimulant action, and he would employ them when other methods seem to be insufficient.

THE PHYSIOLOGICAL ACTION OF IODOFORM.

During the last few years in Austria, Switzerland, and above all in Germany, the carbolized dressings formerly so popular have been largely replaced by iodoform; but the numerous fatal results which have followed the immoderate use of iodoform have been gradually leading to its abandonment by the very surgeons who were instrumental in introducing it. This reaction, as unwarrantable as the previous unlimited use of iodoform, shows that its physiological action has not been at all understood, and the careful experimental analysis of its action by SAUVAT (*Thèse de Paris*, 1883), is therefore a contribution which, by stimulating careful clinical experimentation may prevent the abandonment of a useful drug.

The following are his conclusions:

1. In small doses iodoform produces retardation of the pulse, with increase of vigor of the cardiac contractions. When given in large doses the heart is arrested in diastole.

2. It produces a general depression of the cerebrum and excitation of the spinal cord.

3. Small doses cause an elevation of temperature; large doses a fall.

4. The number of respiratory movements increase when thirty grains are given to dogs, and decrease when 90 grains are given.

5. Large doses produce nausea, vomiting, and then diarrhœa.

6. When applied to wounds iodoform reduces effusion and favors cicatrization; but it may cause erythema, or even erysipelas in the quantities usually employed. It also exerts an anæsthetic action.

7. The secretions are augmented during the first period of its use, and then later diminished.

8. Finally, in autopsies made on persons dying under the use of iodoform, no special characteristic symptoms can be detected other than fatty degeneration of various organs as is apt to be the case with most energetic poisons.

COCAINE, THE DRUG OF THE DAY.

The readers of the THERAPEUTIC GAZETTE are already familiar with much that has been determined and claimed for this new anæsthetic, and it is probable that for some time to come the medical journals will be full of the praises of the value of cocaine as a local anæsthetic. The literature on the subject is already voluminous, and has just been subjected to careful critical analysis by the *London Medical Times*, Nov. 29, 1884, in an interesting article which we take pleasure in laying before our readers, as giving a fair idea of the present status of the question. But ophthalmic surgeons are trying cocaine almost universally, and every enterprising practitioner who has to deal with any painful or excitable mucous membrane within reach of the brush or syringe, will no doubt ere long be following in their wake. The present estimation of the value of cocaine must, therefore, be merely provisional. Whether cocaine is destined to share the fate of the hundred and one drugs that have gone up like a rocket amidst universal plaudits, and come down like its stick amid universal neglect, time alone will show. But the character and variety of the evidence before us seems to give fair promise that in a certain number of applications the drug will prove a really valuable addition to our therapeutic resources. So long ago as 1860 Dr. Albert Niemann, of Goslar, who was the first to give the name of cocaine to the alkaloid extracted from the leaves of the Erythroxylon Coca, observed that it left a transient numbness upon the tongue when tasted, followed by a sensation of cold. But this observation remained unfruitful until Dr. Charles Koller, incited by the researches of Freud, commenced a series of experiments in Professor Stricker's laboratory at Vienna, on the local action of cocaine on the eyes of animals. His earlier results were communicated somewhat prematurely to the Heidelberg Ophthalmological Congress in September last, in order to secure to himself the credit of priority of discovery. A more complete communication on the subject was read before the Vienna Society of Physicians on October 17th, and a *résumé* of it

was published in the *Medical Times* three weeks ago. At the same meeting Dr. Kœnigstein, who had made experiments independently of Dr. Koller, stated that he had obtained practically the same results. These two investigators dealt only with the effect of cocaine on the eye, but at a subsequent meeting of the Vienna Society on October 24th, Dr. Jelinek gave an account of his trials of the drug in producing anæsthesia of the pharynx and larynx. These were conducted in the wards and on the patients of Professor v. Schrœtter, who together with his colleague Professor Stœrk, bore witness to the ease with which difficult manipulations could be undertaken within the larynx, when previously anæsthetized by means of cocaine. At the same meeting Dr. Kœnigstein, who had been continuing his experiments on the ophthalmic applications of this drug, stated that he had been able to remove the eyeball of a dog, previously cocainized, without the animal feeling any pain. Meanwhile observers in England and in this country have not been idle, though their researches have been necessarily confined to experiments upon themselves and their patients. Mr. Bader and Mr. Hartridge have made successful trials with cocaine in ophthalmic practice, which fully corroborate the claims put forward for it by Dr. Koller; while Dr. Felix Semon and Dr. Prosser James have used it in laryngeal operations, with a success which quite bears out the assertions of Schrœtter, Stœrk and Jelinek. Mr. Lucien Howe, an American ophthalmologist, has also carried out a series of trials on animals and patients, the latter in the clinics of Professors Scholer and Schweigger, at Berlin, and has published a concise account of his results in the *Lancet*. While fully recognizing that in the first trials of an apparently useful drug the judgment is apt to be warped by ardent enthusiasm, Professor Howe thinks the belief justified "that cocaine is destined to rank as one of the most valuable agents in ophthalmic surgery."

Pure cocaine occurs in the form of colorless transparent prisms, without smell, but with a slight bitter taste. The hydrochlorate or muriate of cocaine, with which most of the experiments have been made, is a white crystalline powder, which is sparingly soluble in water, but readily soluble in alcohol, ether, oil and vaseline. In the case of the eye, a two per cent. aqueous solution of the drug is sufficient for all practical purposes, and acts almost as well as a solution of double that strength; the throat, however, requires a stronger solution, and Dr. Jelinek recommends a dilute alcoholic solution of ten or twenty per cent. For the former strength the proportion of alcohol to water should be as one to four; for the latter as two to three. When one drop of a four per cent. solution (and the same is true of much weaker solutions) is introduced into the eye, a slight burning sensation is felt. A minute or two later, the cornea and conjunctiva become anæsthetic, and lose all reflex excitability; the finger can be placed over them, and the conjunctiva taken up with the forceps without causing any unpleasant sensations. At the same time there is a feeling of tension in the lids, and the eye seems protruded, as in a case of Graves' disease. The conjunctiva becomes exceedingly pale. These phenomena last for about ten minutes and gradually disappear. In from ten to fifteen minutes the pupil begins to dilate, and there is slight paresis of accommodation. Mydriasis is never present to any great degree, but it lasts for some hours after the anæsthesia has disappeared. Dr. Kœnigstein thinks that these effects are mainly due to the influence of cocaine upon the sympathetic, and the facts that the vessels generally, including, probably, those of the retina, are contracted by it, that the pupil is dilated and the eye protruded, seem to give some warrant for this belief.

With regard to the clinical uses of cocaine, it serves the purpose both of a local anæsthetic and a local anodyne. It may be applied in all cases attended with pain in the eye and photophobia, in painful erosions, phlyctenulæ, injuries, etc., and its power of causing contraction of the vessels seems to indicate it in cases of inflammatory congestion both of the conjunctiva and deeper structures. Professor v. Reuss even recommends it as a mydriatic in glaucoma. As a local anæsthetic, preparatory to operation, it has been used in many operations on the conjunctiva and cornea, in removing foreign bodies from the latter and in tatooing cicatrices upon it, in touching it with caustics, etc. As to its reliability in deeper operations, as iridectomy, operations for cataract, for squint, and on the skin of the eyelids, the evidence is conflicting; but Dr. Koller has pointed out the importance of applying it with systematic thoroughness, and probably some of the failures that have been recorded may be traced to a too ineffectual instillation or to a too hasty operation. Dr. Kœnigstein in-

deed states that even the surfaces of the eyelids entirely lose their sensitiveness when cocaine hydrochlorate is applied in the solid form. For most operations it appears to be sufficient to introduce a drop of a two-per-cent. solution at intervals of two minutes. The maximum effect, according to Mr. Lucien Howe, is reached in fifteen minutes, but earlier according to other observers.

Fewer experiments have been made with regard to the application of cocaine to the larynx, but there can be no doubt that it has considerable power of diminishing the sensibility to pain and controlling reflex excitability. A ten-per-cent. or twenty-per-cent. solution is used according to the sensitiveness of the parts and the seriousness of the projected operation. It should be applied three or four times at intervals of ninety seconds, and the anæsthesia lasts for about a quarter of an hour, *i. e.*, quite sufficient for the majority of endo-laryngeal operations. The solution must be applied systematically with a brush or mop to all parts of the pharynx or larynx which the operator is liable to touch in the course of his manipulations, and the epiglottis must therefore be anæsthetized with special care. The most successful case yet placed on record is one in which Dr. Schrœtter removed some warts from the larynx of a child of seven, without experiencing any difficulty on the part of the patient. As an anodyne in painful affections of the pharynx and larynx it is possible that cocaine may entirely supersede the use of morphia, and become a valuable means of promoting the euthanasia in those dolorous cases of laryngeal cancer and tuberculosis, the progress of which is perhaps the most trying that the physician has to witness. The drug will also be found useful in facilitating examinations with the laryngoscope, in all cases where there is much reflex irritability of the soft palate and pharynx. In such cases it need only be applied to the parts with which the laryngeal mirror is likely to come into contact.

There are many other functions which cocaine will no doubt be called upon to fulfill, presumably with some measure of success. It might be employed to facilitate difficult catheterism, and by its injection into the bladder to remove the painful contractions met with in obstinate cases of catarrh. It will also probably be applied, with more or less success, in painful affections of the vagina and rectum; and it may be presumed that it would be of use in cases of vaginismus though its transient effects will of course considerably limit its utility. It would also be worth trying in those incorrigible affections, pruritus ani and pruritus pudendi, and it may possibly be of use in some forms of gastralgia. Whether it would be found efficacious in allaying the painful irritation in appropriate cases of eczema is doubtful, but it will be worth a trial. The only disadvantage connected with it is, as Dr. Jelinek observes, its costliness. It is at present purchasable for about eighteen cents a grain, and it has been estimated that to secure a painless and easy endo-laryngeal operation costs several dollars. There is at present probably little chance of a diminution in the price, and if, as is quite possible, the market has been interfered with by some enterprising wholesale firm, the cost may run up to a point which would seriously limit the application of the drug. If it should sustain its popularity, however, a powerful impulse will be given to the growth of coca—a plant which is at its best when carefully cultivated—and a new opening will be provided for capital and industry. But it will take long before such operations make any impression on the market price of the alkaloid.

In conclusion we may state our belief that the claims of cocaine to a valuable use in a limited series of applications, though put forward with all the confidence with which new drugs are wont to be ushered in, are supported by much better evidence, both of reason and experience, than those of many of its predecessors which, having been convicted of taking in the profession, have finally met with the treatment deserved by all impostors.—*Medical Times*, Nov. 29, 1884.

THE ACTION OF HYDROCHLORATE OF COCAINE.

At the meeting of the Ophthalmological Society, held on Oct. 9, Mr. Arthur Benson (*Lancet*, Oct. 18, 1884) read some observations made with a two-per-cent. and four-per-cent. solution, in twenty-five different individuals, on the action of hydrochlorate of cocaine in the eye. He found that anæsthesia of the cornea and conjunctiva was produced by a drop instilled into the conjunctival sac; that this anæsthesia came on almost immediately after its application, and lasted only about five or six minutes, when it gradually faded away. He considered that, as far as his experience went, the drug was of no appreciable assistance in operations, the anæsthe-

sia being too imperfect. In most cases it produced slight paresis of accommodation, with partial dilatation of the pupil for about half an hour, followed by contraction of the pupil and spasm of accommodation, which again gave way to the normal condition in about one-and-a-half or two hours. He had extracted cataract, done iridectomy and some minor operations with its aid, but found no appreciable benefit, except in the most trivial cases. The anæsthesia was very transitory, and it was, therefore, necessary, in order to obtain the best results, to use the drug very shortly before operating.

MR. NETTLESHIP stated that he had used this drug in two cases, and that it had produced anæsthesia without any inconvenience. He suggested that if the drops were frequently instilled so as to maintain the effect, the drug might be practically useful.

DRY FOOD IN THE TREATMENT OF GASTRIC DISORDERS.

Gubler pointed out that milk diet, which renders such important service in the treatment of many diseases, is only productive of harm in cases of torpid dyspepsia, or in those in which there is a disposition to diarrhœa. And Debove has shown that the injection of milk may lead to dilatation of the stomach, or will certainly aggravate that condition if already present.

DR. H. HUCHARD (*Centrlb. f. d. ges. Therapie*, Nov., 1884) has had cases of the most diverse type of gastric disorders on his hands which obstinately resisted various plans of treatment, and in whom the injection of fluid, of no matter what character, always produced an aggravation of the symptoms; in these cases mere restriction in the amount of fluid taken was the sole means which produced any improvement. Such a plan of treatment (restriction to a dry diet) is especially valuable in cases of certain forms of dilatation of the stomach and atonic dyspepsia. This method, which was first introduced by Chomel, consists only in the forbidding, to as great an extent as possible, of all forms of drinks, fluid foods and medicines. Lukewarm baths and frequent sponging of the body will serve somewhat to replace the lack of fluid in the diet, and never more than one glass of the patient's ordinary beverage should be taken during meals. The interval between the morning and evening meal should not be less than eight hours. The diet recommended permits the use of various soups and broths, but they should be as concentrated as possible. Different kinds of meat are not objectionable, but they should be eaten without gravies or sauces. Fruit is allowable, with the exception of the more watery varieties, such as grapes, plums and melons. Of drugs, only those should be given which are suited for administration in the dry form.

A CASE OF POISONING BY CARBOLIC ACID FOLLOWED BY SEVERE BRONCHITIS: RECOVERY.

Mr. L. M. GUILDING reports in the *Lancet* for Oct. 18, 1884, the case of a boy aged three years and a half, who was admitted to the Middlesex hospital half an hour after having taken a small quantity of a solution of crude carbolic acid used for disinfectant purposes.

He was in a state of extreme collapse, with cold, clammy extremities, shallow, labored respiration and all but pulseless. Four drachms of ipecacuanha wine and a small enema of beef tea and brandy had already been administered, and, after being put to bed, hot water bottles were placed to the axillæ and feet. As the emetic took no effect, a hypodermic injection of 1-10 grain of apomorphia was given, which in a few minutes was followed by an attempt to vomit; his nose and mouth became clogged with yellowish mucus, his face grew livid and cyanosed, and he was all but asphyxiated. His throat was swabbed out and the natural color in some degree returned, but the general depression was much worse; pulse thready, fluttering, and scarcely perceptible ; respiration 90 and very labored, and loud mucous râles audible over the entire chest. Ten minims of ether were injected sub-cutaneously, and enemata of two ounces of beef tea and half an ounce of brandy were given every four hours, and a linseed jacket poultice applied to the chest. Under this treatment he rallied, and in a few hours was sleeping quietly, apparently free from all danger beyond a severe attack of bronchitis, from which, however, he ultimately recovered, though there was a long period of profound mental depression.

The following points are of interest in this case :

In the first place it is seen that where a rapid and efficacious emetic is needed, ipecacuanha wine is practically worthless on account of the time it requires to act, and possibly owing to the fact that unless the bottle containing it is well shaken, little but sherry

wine will be given,—a practical point which is apt to be overlooked. Apomorphia is efficacious but depressing to a dangerous degree; as an emetic nothing surpasses the household remedy of mustard and water, or the sulphates of copper or zinc.

In the second place this case shows that in cases of carbolic acid poisoning in children the main effort should be to arrest the dangerous state of shock and collapse which is invariably present, and as a severe consequent bronchitis may always be apprehended to give it early and prompt treatment. For apart from its immediate local effect, carbolic acid appears to be very liable to excite bronchopulmonary irritation, and fatal cases of pneumonia due to this poison have been recorded.

In this case the urine was passed in bed so no examination was made for the presence of the poison or implication of the kidneys; there was no blood in the matter vomited.

THE PHYSIOLOGICAL ACTION AND THERAPEUTIC VALUE OF PILOCARPINE.

The following *résumé* as to the physiological action and therapeutic uses of pilocarpine is drawn from an elaborate essay on this subject by H. LAVRAND (*Thèse de Paris*, 1883).

Within the first minute after a subcutaneous injection of pilocarpine the skin becomes reddened and the patient experiences a sensation of warmth, or even of vertigo and faintness; after about three minutes salivation commences which is almost immediately followed by diaphoresis, and excessive lachrymal, nasal and bronchial secretion, frequently accompanied by vesical tenesmus.

The pulse becomes more rapid, fuller and then irregular, and this irregularity, in cases of cardiac disease, may progress to almost complete asystole. Sometimes the pulse is, on the other hand, considerably slowed and may become so feeble as to be almost imperceptible, to again, after about an hour, regain its original tone. At first the temperature is raised from $\frac{2}{10}°$ to $\frac{3}{10}°$ C., to be replaced at the end of the sweating stage by a fall of temperature which may be as great as 1° or 1.5° C.

For twenty-four hours after the administration of pilocarpine the urine is greatly decreased in quantity, as is also the amount of urea and uric acid; both the latter are increased in amount the following day, especially if salivation and diaphoresis have been marked. The appetite is lost during the sweating stage, but afterwards appears to be augmented.

Finally the author was able to confirm the antagonism of pilocarpine and atropia on the salivary and sweat glands, on the heart, the iris, the stomach and intestines, the glycogenic functions and perhaps on the uterus and bladder. It was also noticed that no matter what the mode of administration pilocarpine produces a spasm of accommodation in the eye, the intensity varying with the dose given.

As regards the therapeutic applications of pilocarpine M. Lavrand believes that if used at the very commencement it may prove useful, through producing sweating, in nearly all diseases resulting from exposure to cold (angina, laryngitis, bronchitis, influenza, pleuro-pneumonia). In asthma and in attacks of dyspnœa in emphysema, although it acts less rapidly than morphia as a sedative, it gives relief by stimulating bronchial secretion.

In diphtheria it has proved of service, though no claims for its specific virtues can be sustained; it should be used as an adjuvant to other treatment, and great care be taken against the production of collapse. Pilocarpine seems frequently to arrest acute pleurisy if given at the onset of the disease, and even old effusions will not unfrequently disappear under its use. In ophthalmology it deserves a place as a myotic along side of eserine; its characteristic effects are produced whether administered subcutaneously or by instillation. In acute nephritis, under the influence of pilocarpine, the symptoms rapidly improve and in the majority of cases a prompt cure results. Pilocarpine is also a valuable remedy in all forms of uræmic accidents, whether puerperal or resulting from scarlatina. Chronic parenchymatous nephritis in all stages is frequently ameliorated by pilocarpine, even when uræmia is present; but the more recent the case, the stronger may be the hope of doing good.

In chronic interstitial nephritis it is equally useful, though in this case advanced cardiac lesions form an absolute contraindication.

TREATMENT OF CHRONIC DYSENTERY BY VOLUMINOUS INJECTIONS OF NITRATE OF SILVER.

At the meeting of the Clinical Society of London, held Nov. 14, 1884, DR. STEPHEN MACKENZIE stated that extended experience had strengthened his belief in the value of large enemata of nitrate of silver in the treatment of cases of chronic dysentery, or dysenteric diarrhœa. The mode of procedure he adopted was as follows: The quantity of nitrate of silver to be used was dissolved in

three pints of tepid water in a Leiter's irrigating funnel which was connected by India rubber tubing with an œsophageal tube with lateral openings. The patient was brought to the edge of the bed and made to lie on his left side, with his hips well raised by a hard pillow. The terminal tube, well oiled, was passed about eight or ten inches into the rectum, and the fluid allowed to force its way into the bowel by gravitation. The injection rarely caused much pain, and often none. It usually promptly returned, but when long retained, it was advisable to inject chloride of sodium to prevent absorption of the silver salt. Various strengths had been used, from 30 to 90 grains to three pints of water, but usually one drachm of nitrate of silver was employed. The treatment was based on the view that whatever the nature of dysentery, whether constitutional or local in the first instance, the later effects were due to inflammation or ulceration of the colon which was most effectually treated, as similar affections elsewhere, by topical measures. Sometimes one, sometimes two injections were required, and in some cases numerous injections were necessary; but in all the cases thus treated, many of which had been unsuccessfully treated in other ways previously, the disease had been cured.

In most cases other treatment was suspended, but in some Dover's powder, or perchloride of iron, which had been previously administered, was continued or subsequently prescribed.

The cases narrated were:

1st. In which the disease had lasted several years on and off; two injections were used, and the case was cured in six weeks.

2d. Second attack, duration uncertain; four injections used; cured in five weeks.

3d. Duration two months; two injections used; cured in three-and-one-half weeks.

4th. Duration, five years; one injection used; cured in three weeks.

5th. Duration, eighteen months; two injections used; cured of dysenteric symptoms, but remaining under treatment for diabetes.

6th. Duration, fourteen months; one injection used; cured in seven weeks.

The treatment, which laid no claim to novelty, was brought forward to elicit the experience of others who had tried it, or to induce others to employ it in suitable cases.—*Medical Press and Circular*, 19, 1884.

TREATMENT OF CONTUSED WOUNDS WITH THE DECOCTION OF VALERIAN ROOT.

Acting in the advice of M. Gréhant, who had himself made use of this method of treatment introduced by M. Landragin, M. ARRAGON has experimented on the results produced by the application of a decoction of valerian root to contused wounds, and has communicated his conclusions to the Société de Biologie (*Jour. de Médecine*, Oct. 1884).

The preparation which he employed is made by boiling one ounce of valerian root for half an hour in one quart of water, filtering and using the filtrate for soaking compresses which are applied to the wounded surface and kept continually moist.

M. Arragon has notes of fifty cases in which this mode of treatment produced very satisfactory results and only two where it failed: they include a case of dislocation of the wrist cured in twelve days; contused wounds of the legs due to kicks by a horse; lacerated wounds; and also inflammation of the middle ear cured by injections of this decoction. While the cures resulting from this method of treatment may not be more rapid than those otherwise produced, by the use of valerian so applied all pain is at once subdued, probably from anæsthetic action on the terminal nerve fibres.

TREATMENT OF PUERPERAL CONVULSIONS BY DIAPHORESIS.

DR. CARL BREUS (*Journal de Médecine de Paris*, Nov. 1, 1884), has adapted a method of treating puerperal convulsions which consists in placing the patient in a bath heated to 100° F. and then still further raising the temperature as high as can be supported by the patient. After this bath, which should last half an hour, the patient is wrapped in a warm sheet, placed in bed and covered with blankets for two or three hours. During the bath a profuse perspiration appears on the parts without the water, that is on the head and face, and when placed in bed and well covered up, sweating of the entire body is produced ; if thirst is complained of, a little Seltzer water or lemonade may be given. The patients usually fall asleep during this treatment and wake up greatly improved.

The author reports six cases treated in this manner. In the first the eclampsia set in during the ninth month of gestation, the attacks ceased at the end of the tenth day, and a living child was delivered four weeks later. In the second case the convulsions

appeared at the sixth month and ceased after eleven days; a living child was born six weeks later. The author states that this treatment reduces the dropsy and albuminuria, and is very useful when combined with other measures, though by no means a specific.

THE TREATMENT OF EPILEPSY WITH OSMIC ACID.

For more than two years WILDERMUTH has been employing osmic acid in the treatment of epilepsy. His results are recorded in the *Bulletin Génerale de Thérapeutique* for Oct. 25, 1884. At first he administered this drug in watery solution, but latterly he has employed the osmate of potassium in pill form, each containing $\frac{1}{64}$ grain; the daily dose should not exceed fifteen of these pills.

His studies were made on ten old cases which had resisted other forms of treatment. Of these, no benefit whatever was obtained in seven; in two, the attacks became less frequent; and in the tenth case, which had appeared also desperate, a rapid cure resulted —at first a decrease in the frequency and intensity of the attacks, followed by their complete disappearance and great improvement in the patient's mental condition.

Three other cases more recently treated by this plan gave the following results: In two, marked amelioration, decrease in the number and severity of the attacks. In the third case the osmate produced no effect.

In no case did the use of this drug ever produce any disagreeable or unpleasant symptoms; it is, therefore, worth a trial.

THE TREATMENT OF CHRONIC GLANDULAR LARYNGITIS.

Chronic glandular laryngitis is a form of inflammation of the larynx which results from excessive use of the voice in public singing or speaking, particularly in cases predisposed to the strumous cachexia. Hoarseness is not ordinarily noticed, but the patients will complain of a sense of heat and prickling or stinging in the throat, with dryness, which provokes frequent swallowing to gain the moistening influence of the saliva; cough and expectoration are nearly always absent.

When the throat is examined, the mucous membrane will be found to have a granular appearance in those positions where the racemose glands are most numerous; this condition should therefore be looked for along the sides of the arytenoid cartilages and on the pad of the epiglottis. In early stages these granular elevations are red and congested, but when the case has lasted several months they become grayish in color. This affection has been made the subject of careful study by Dr. GORDON HOLMES (*Lancet*, Nov. 22, 1884), and the following are his recommendations as to treatment: As there is generally a constitutional taint, strumous or otherwise, appropriate remedies for its removal, such as cod liver oil, iron and other suitable tonics, will have to be administered; when there is no evidence of any but local disease it will, of course, be unadvisable to subject the patient to any such general treatment. When the malady occurs in professional speakers and singers, the practitioner should impress on the patient the importance of breathing as much as possible through the nose. In this way only warm and moist air comes in contact with the respiratory mucous membrane, and one of the active causes of the disease, the over stimulation of the mucous glands by cold, dry air, will be avoided.

As regards local treatment, warm or soothing inhalations of steam medicated with benzoin, conium, pine oil, etc., will be most useful as palliatives when there is much heat and irritative sensation. Astringent lozenges of kino, rhatany, tannic acid, etc., will often lessen the hyperæmia, and together with the daily applications of solutions of perchloride of iron (two drachms to the ounce), sulphate of copper (twenty grains to the ounce), or chloride of zinc (thirty grains to the ounce) may banish this symptom entirely.

Such measures will sometimes suffice to effect a cure in mild and incipient cases. In more obstinate instances insufflations of astringent powders (alum, gallic acid, borax, powdered catechu, etc.) two grains at a time, through a curved tube brought close to the larynx, will be found effective.

At the same time the patient may use the astringent solutions of half or quarter strength in the form of spray inhalation, two or three times a day for five minutes at a time. In the long standing and fully developed examples, however, when the granulations are present in considerable numbers, an application of more causticity is absolutely necessary, so as to destroy gradually the substance of each elevation. For this purpose nitrate of silver is the only safe and convenient salt. It must be used daily, or on alternate days, in the solid form, the end of a curved sound or probe being coated with it (as originated by Lewin); the caustic must be pressed closely to

each granulation or group of the same by the aid of the laryngeal mirror; and the process must be continued until the elevations are brought down to the level of the normal mucous membrane.

DISINFECTION BY SULPHUROUS ACID.

In a communication to the French Academy M. DUJARDIN-BEAUMETZ relates the results of the experiments which he performed at the Cochin Hospital as to the relative disinfecting powers of sulphurous acid and certain other substances. (*Jour. de Médecine*, Oct. 1884). He concludes that sulphurous acid is the best of all disinfectants, and shows that all germs and microbes, even those of anthrax, are destroyed in a room in which this acid had been generated. M. Beaumetz was thus able by means of the microscope to confirm the ideas generally held as to the efficacy of this disinfectant, and to prove its superiority to disinfection by heat, a means, by the way, whose difficulty of accomplishment is not sufficiently appreciated.

Of all the means of production of sulphurous acid, one only is practicable for purposes of disinfection, viz., the combustion of sulphur with enough alcohol to ignite it; other methods which have been recommended, such as the burning of sulphide of carbon, require special apparatus, and are not entirely free from danger.

M. Pictee, of Geneva, has introduced into commerce siphons, similar to those of carbonic acid water, charged with sulphurous acid which may readily be liberated and conducted by means of rubber tubing to the locality which it is desired to disinfect. As yet the high price of this arrangement is against its general adoption, but a great advantage which it possesses is the freedom from risk of fire which it ensures ; it is not, however, suitable for the disinfection of large spaces.

In the disinfection of a room, all the objects should be left in position, and about one ounce of sulphur burned for every cubic yard of space which it is desired to disinfect. The best means of avoiding danger from fire is to employ two earthenware vessels placed on top of one another, the upper and smaller one containing the sulphur and alcohol, the lower one containing wet sand. If then the upper jar breaks with the heat, the burning sulphur falls onto the wet sand and not onto the floor. The room which is being disinfected should be kept closed for 24 hours after lighting the sulphur.

Bleaching from the fumes of the sulphur must be expected; all metallic objects are also attacked ; they may, however, if necessary, be protected by coating them with oil before the process of disinfection is commenced.

The above is the ordinary method employed in most of the hospitals in France, and it cannot be too highly recommended.

ACCIDENTS PRODUCED BY TINCTURE OF ARNICA.

A veterinary surgeon, M. PAUL CAGNY, calls attention in the *Recueil de Médecine Vétérinaire*, to the severe symptoms which are often produced in horses, particularly in those with a delicate skin, by the free application of the tincture of arnica, and mentions the case of a foal which was kicked by another horse and in which the slight abrasion so produced was treated by the prolonged local application of bandages soaked in pure arnica. The part became swollen and inflamed, and soon had all the appearances due to the action of a powerful vesicant.

This fact suggests that in human practice also numerous cases will be met with in which vesication or even erysipelas will follow the use of this application.

Tincture of arnica is too apt to be regarded as a panacea, particularly by the laity, for all bruises, etc., and even the physician is apt to regard it as a substance which can do no harm even if it does no good. But severe inflammatory action may be set up by its use, not only on wounds, but even on contusions where the skin is not broken. Its use should, therefore, never be left uncontrolled to the patient.

THE TREATMENT OF RACHITIS WITH PHOSPHORUS.

During the last few months there have been published a number of valuable communications on the treatment of rachitis by various phosphorated preparations, and these articles form the basis of an elaborate review on this subject in the *Gazette Médicale de Paris*, Nov. 13th, 1884, parts of which will prove of interest to our readers.

In 1872 Wegner determined that phosphorus given in suitable doses to young animals exercised a remarkable influence on the development of their bones. In the neighborhood of the articular cartilages, the long bones, instead of being hollowed out with cavities filled with marrow and hav-

ing the regular character of spongy bone, became transformed into an extremely compact tissue, traversed by medullary canals of very narrow calibre. Only the layers of bone formed during the course of the experiment participated in this nutritive modification, and at first Wegner thought that this discovery was capable of practical application in the treatment of rachitis. He was, however, led to abandon this idea through the views which he held as to the pathology of the affection, believing, in accordance with the theory of the time, that rachitis was due to a disturbance of nutrition characterized by an insufficient absorption or an excessive resorption of calcareous matters, and he could not see how phosphorus could assist the one process or delay the other. This doubt was strengthened by certain experiments in which the administration of phosphorus to young animals fed on a diet which was poor in calcareous matter did not prevent the development of the characteristic lesions of rachitis.

But M. Kassowitz (*Wiener Med. Jahrbücher*, 1879–80–81) has been led through his researches as to the mechanism of ossification in the normal and pathological condition to the following views: He believes that the deposit of calcareous salts in the layers of newly-forming bone is associated with a retrograde development of the vascular tissues, or at least with a diminution in the activity of circulation and osmosis. On the other hand the decalcification of cartilage and bone, the solution and absorption of lime salts already precipitated, is in a not less strict connection with the formation of new blood-vessels and great activity of circulation in the blood-vessels already formed. Finally, in rachitic bones the osteogenic layers, the cartilage, perichondrium and periosteum, are the seat of abnormal vascularity which leads to new formation of blood-vessels as well as an exaggerated over-distension of those already existing. There results an arrest in calcification in the layers where the development of bone is taking place and a decalcification in the layers newly ossified, and he shows that results directly opposed to those of Wegner may be obtained by a change in the dose of phosphorus administered.

In large doses phosphorus, after having passed into the blood, determines a manifest dilatation and hyperplasia of the blood-vessels in the youngest layers of bones and therefore leads to their decalcification.

But in small doses the phosphorus arrests decalcification of calcified cartilage and newly formed bone, and diminishes the number of vascular elements, probably through contraction of their walls, and, as a consequence, reduces the number and volume of the primitive medullary spaces.

Making practical application of these experimental facts in the treatment of rachitis, M. Kassowitz has obtained the most surprising results, which seem to prove that phosphorus is almost a specific for this disease. Under the influence of phosphorated medicine, (in formulæ which we will give directly), the ossification of the membranous portions of the skull and the epiphyseal extremities of the long bones in rachitic children proceeds with the utmost rapidity, so that the characteristic troubles are rapidly dissipated. This favorable influence of the phosphorus extends also to the rachitic lesions of the thorax and vertebral column, and although irremediable deformities may exist, their future development is completely arrested; and by combining this remedy with appropriate orthopœdic measures all recent malformations may be successfully combated.

In addition, the general nutritive condition improves; the nervous phenomena of rachitis, among which may be included spasm of the glottis, disappear; and dentition which most probably has been in a backward state, is returned to its normal standard.

M. Soltmann, of Breslau, well known for his valuable work on infantile pathology, and Prof. Hagenbach, of Bâsle, both confirm the statements of Kassowitz as to the beneficial effects of phosphorus in rachitis; and although Weiss, of Prague, reports six failures in seven cases treated in this manner, his results are of little importance when contrasted with the 560 cases which serve as the basis for M. Kassowitz's communications.

The following are the directions for the employment of this method of treatment. The daily dose should be $\frac{1}{130}$ grain, given in suspension in oil. One of the following formulæ may be used:

1. ℞ Cod-liver oil, ℥ iiiss.
   Phosphorus, gr. ¼.

M. S.—One or two coffee-spoonfuls to be taken every day.

2. ℞ Oil of sweet almonds, ℥ iiss.
   Phosphorus, gr. ¼.
   Powdered sugar, ℥ i.
   Strawberry ether, gtt. xx.

M. S.—Same dose as above.

3. ℞ Oil of sweet almonds, ℥ i.
Phosphorus, gr. ½.
Powdered gum arabic
Powdered sugar, āā ʒ iv.
Distilled water, ℥ iss.

M. S.—Same dose.

As the last two preparations are somewhat costly they are not adapted for use for poor patients. A few drops of the strawberry flavoring extract, which thoroughly disguises the taste of the phosphorus, may also be added to the last prescription.

THE TREATMENT OF INTESTINAL STRANGULATION AND CHRONIC INTESTINAL OBSTRUCTION.

Hitherto it has been the custom to place cases of strangulation of the bowel amongst those of obstruction, and, indeed, to consider them as only one of its forms. Mr. Thos. Bryant (*British Medical Journal*, November 22, 1884) is, however, of the opinion that this arrangement is a grievous error; since in strangulation of the intestine, obstruction is only one of the symptoms, but not the cause of danger or of death; whereas, in cases of intestinal obstruction, the obstruction is the prominent and dangerous feature, and from it, or it chiefly, the consecutive changes are brought about. In proof of this view he adds the fact that when acute strangulated hernia is relieved by operation or taxis, the symptoms, however severe they may have been, at once disappear, though possibly there may be no action of the bowels for two or three weeks subsequently, the want of action not giving rise to any special symptoms; thus proving that in this, as in all acute cases, the symptoms are due to arrest of circulation of venous blood through the strangulated bowel, and not to the obstruction to the passage of intestinal contents. It was from a faulty appreciation of this fact that the older physicians gave purgatives in internal intestinal obstruction, as well as in strangulated hernia after its reduction, while it is evident that there is nothing less than the removal of the strangulating causes from which the slightest good is to be anticipated. And, as in strangulated external hernia, so in internal strangulation from whatever cause, the same principles of treatment are applicable: operate as soon as possible to prevent the death of the bowel.

Mr. Bryant lays down the following as rules of practice:

1. Laparotomy should be undertaken as soon as the diagnosis of acute intestinal strangulation is made. There should be no delay allowed for the formation of a special diagnosis of its cause. It should likewise be proposed in all cases of acute intussusception, and of chronic, which have failed within three, or at the most four days to be relieved by other treatment.

2. In all operations of laparotomy, it is to the cæcum that the surgeon should at first advance, since it is from it he will obtain his best guide. If this be distended, he will at once know that the cause of obstruction is below; if it be found collapsed, or not tense, the obstruction must be above. Adhesions or bands, are, moreover, more frequently near to, or associated with, the cæcum, than with any other part of the intestinal tract. It is also in the right iliac fossa that the collapsed small intestine, in cases of acute strangulation, is usually to be found; and with this as a starting point, the surgeon will have less difficulty in tracing up the intestine to the seat of strangulation, than if he begins at a distended coil, when it will be a matter of chance whether he travels away from or toward the special object of his search—the seat of obstruction.

3. In a laparotomy, when the strangulated coil of bowel is gangrenous, it should be brought out of the wound and the gangrenous knuckles resected. The proximal and distal ends of the resected bowel should then be stitched to the edges of the wound, and an artificial anus established.

4. Nélaton's operation of enterotomy should be undertaken in all cases of intestinal strangulation when laparotomy is rejected or seems inapplicable, as well as in cases of intussusception in which the invaginated bowel cannot readily be released. It should be performed in the right groin, or, rather, right iliac fossa.

5. If laparotomy succeed the cause which called for it is removed, and the normal action of the bowel is restored. If resorted to early and as a rule of practice, it is probable that it will be more successful than the treatment by opium, inflation or purgatives, which has hitherto been in vogue.

ACTION OF SALICYLATE OF SODA ON THE UTERUS.

In his thesis on this subject M. Balette calls attention to some little-known properties of the salicylate of soda.

In the first place he shows that it may prove very useful in dysmenorrhœa, relieving the

pain and facilitating the discharge. Given in doses of from one drachm to one drachm and a half it produced marked relief in three cases within an hour.

There is also another property of the drug even less known: that is its menorrhagic action. M. Balette cites several instances which show that in certain diseases the salicylate may either produce menorrhagia or prolongations of the menstrual periods. This action is readily explained when it is recollected how readily the salicylates produce hemorrhage elsewhere, such as hematuria, epistaxis or even hemorrhage into the alimentary canal.

Finally, there is another accident which has been attributed to salicylate of soda; it is said to produce abortion. In this regard, however, different opinions are somewhat contradictory, and the experiments on animals reported by Balette failed to show any oxytocic properties. It would be safer, however, in cases of pregnancy, particularly if there is a tendency to abortion, either to dispense with the use of this drug or to observe the greatest caution in its employment.—*Journal de Méd.*, Nov., 1884.

THE TREATMENT OF ACNE.

In this analysis of the methods of treatment of acne, as detailed in the valuable critical Review on this subject published by Dr. Brocq in the *Journal de Médecine de Paris*, for Oct. 25, 1884, no attempt will be made to examine the innumerable plans which have been proposed for the treatment of this disease. All that we will attempt will be the notice of those which are most likely to prove of practical advantage in the treatment of acne, which, after eczema and the various parasitic affections, is the most frequently met with of all cutaneous diseases.

The most striking characteristic of acne is the extreme tenacity with which it clings to an individual when once it gains a foot-hold. It is often possible to moderate the intensity of its manifestations, to improve the appearance—to bleach, as it were, the patient, but the disease is almost sure to return with its original virulence if the most extraordinary precautions are not constantly observed; and if the physician, satisfied with an ephemeral improvement, is sanguine enough to believe that the affection has been permanently eradicated, and has, therefore, discontinued treatment. Acne, like most other cutaneous affections, is by no means a purely local disease; most often it is only the external manifestation of some constitutional vice.

For a long time, since the valuable studies of Bazin, it has been known that polymorphous acne is closely associated with the lymphatic diathesis, especially when constituted by a commingling of simple acne with the pustular and phlegmonous forms, with seborrhœa and comedones, occurring on the face, and on the chest and upper part of the back. Under such circumstances certain authors have designated it by the name of strumous acne. Then, again, certain forms of acne rosacea are evidences of the arthritic diathesis, and other forms of acne coincide with gastric, intestinal or uterine disorders, and disappear when these disorders are cured. It is, therefore, evident, when a case of acne comes under treatment, how important it is to recognize the peculiar characteristics of the individual constitution in which it occurs; and the explanation of the frequent failure, as regards permanent cure, which follows many attempts at treatment of acne, is often to be found in the mistaken notion as to the purely local character of the disease. Local treatment should, therefore, be combined with internal medication appropriate to the cause of the acne eruption.

This necessity has been thoroughly recognized in the recent papers of Dr. Piffard, in the *Journal of Cutaneous and Venereal Diseases*. In common acne (A. vulgaris, A. disseminata), he recommends the use of sulphide of calcium in very small doses, observing the greatest caution and suspending its use when it appears to produce any morbid symptoms, and returning to it when they have passed off. This drug is especially suitable for persons with lymphatic constitution, while on the other hand bromide of arsenic should be reserved for those with a robust temperament. As local treatment he opens each papular pustule of acne with the point of a lancet, emptying their contents and washing with water as hot as can be borne by the patient. Or, without opening the papule, soothing applications, such as belladonna or stramonium, incorporated with benzoated lard, may be applied. In chronic cases the calcium sulphide may be used in doses sufficiently large to produce its full physiological action, *i.e.* until the local lesions appear to have undergone a marked increase, when all internal treatment should be suspended. Sometimes the internal administration of corrosive sublimate or iodide of potassium may be of service; this treatment must also be suspended from time to time.

Against subacute acne topical applications

must be used which excite the circulation, and which excite the intensity of the pathological process. After inflammation and tumefaction of the integument have been produced by these means, the irritant treatment is suspended and replaced by emollient applications, to be again recommenced. After each of these successive enforced inflammations, the corneal layer of the epidermis undergoes desquammation, and, as a consequence, the acniform lesions become less abundant and less severe.

On the other hand it is evident, from the various degrees of cutaneous susceptibility of different subjects, that no rigid rules can be given for the dose or for the number of days during which this treatment should be persisted in.

Black soap is also much used in France for the treatment of acne. It may be used in friction night and morning with very warm water, or, if this proves insufficient, the soap may be dissolved in alcohol and a flannel rag soaked in it may be applied during the night. The last procedure is also highly recommended in erythematous lupus, and should be persisted in until an intense inflammatory reaction is obtained.

Precipitated sulphur, or flowers of sulphur, is also very efficacious in the treatment of the different forms of acne, from simple acne to seborrhœa. The following is the formula which is usually employed in the *Hôpital St. Louis*: Precipitated sulphur and camphorated alcohol, each 375 to400 grains, in eight and a half fluid ounces of distilled water. Before use the bottle must be shaken, as the sulphur settles to the bottom, and the mixture then painted on the diseased parts at night, allowed to dry and care taken to avoid rubbing off the layer of sulphur. On the following morning the surface is to be washed with black soap and warm water, or with a decoction of panama wood: then, if the derm is somewhat inflamed, it is covered with a layer of vaseline in which two parts of oxide of zinc is incorporated with every twenty parts of vaseline. This plan is continued with until the disease is cured, or until the inflammation becomes too intense: in the latter case treatment is temporarily suspended. In cases where the susceptibility of the skin to irritation is very marked, the quantity of sulphur in the above prescription must be reduced.

Another substance which in all countries enjoys a high reputation in the treatment of acne, is the bichloride of mercury. It may be employed either as an ointment or in solution. The best plan is to commence with the 1-10 of one per cent. warm solution, applied each morning, and gradually increase the strength of preparation. During the day the part may be covered with a thin layer of oxide of zinc ointment, which not only serves to calm the irritation produced by the mercury, but to protect the skin against wind, cold and sun, influences which are often causes of acne.

These are the principle topical measures required in the treatment of acne; but before commencing with the more energetic measures, there are two plans of treatment which should be first tried: one is the external use of camphorated alcohol. Very often washing the surface, morning and evening, with warm water containing a little camphorated alcohol, or even cologne water, will suffice to cause the disappearance of acne from the forehead, back, shoulders or upper part of the chest. The other is the internal administration of ergot in doses of 15 to 30 grains daily. It is difficult to say how this substance acts, but it is nevertheless the fact, according to Dr. Brocq, that its use will often be followed by marked amelioration of the symptoms.

TREATMENT OF MALARIAL FEVER BY SUBCUTANEOUS INJECTION OF CARBOLIC ACID.

Dr. Dieulafoy communicated to the Société Médicale des Hôpitaux on Nov. 10th, the history of a patient who since 1877 had had tertian fever three times, which had always been successfully treated by the administration of quinine. The fever having returned last June, the patient came under the care of Dr. Dieulafoy, who on the first day injected subcutaneously $\frac{1}{3}$ grain of carbolic acid dissolved in 100 parts of water. The quantity was increased on the following day to $\frac{2}{3}$ of a grain, and to one grain on the days of apyrexia. Recovery was complete at the end of seventeen days. The patient had then absorbed over thirteen grains of carbolic acid without showing any signs of poisoning. In the subsequent discussion, Dr. Laveran reverted to the fact that carbolic acid injections had been employed against marsh fever so far back as 1869, with questionable success. He doubted the propriety of attempting to supplant so certain a remedy as sulphate of quinine.

Dr. Huchard related the case of an Arab in whom quotidian attacks of fever, which had resisted all other remedies, yielded to

bromide of potassium; and Dr. Labbé alluded to the good effects, too much overlooked, of arsenical medication in malarial poisoning.—*Lancet*, Nov. 15, 1884.

RHEUMATIC TETANUS CURED BY PARALDEHYDE.

Everyone knows that for some time chloral has been employed with success in the treatment of rheumatismal tetanus; it is, therefore, of great interest to know that in cases in which it fails, a cure may possibly be produced by the employment of paraldehyde. Cervello, Dujardin-Beaumetz and Morselli have already called attention to this fact, and a case recently reported by Dr. F. Ottari, in the *Gaz. degli Ospitali*, confirms their statement.

The case was that of a man, 53 years of age, of good constitution, who was attacked with rheumatismal tetanus after working in a pit in which his feet were in water. A little over two drachms of chloral were given in twenty-four hours by the mouth and rectum, and this system was persisted in for several days, but without producing any great benefit; the contracture of the muscles of the neck and back was somewhat less painful, but the trismus and contracture of the abdominal *recti* muscles and legs were not relieved in the least. The patient then refused to continue to take the chloral any longer on account of the great oppression which it seemed to cause. It was, therefore, replaced by paraldehyde.

In the first day one and a half drachms of the paraldehyde in three and a half ounces of water were taken in two doses with two hours interval and procured for the patient an absolutely calm sleep. The dose was then increased to one and two-thirds drachms taken in the same amount of water sweetened with syrup. The patient at once commenced to improve and in ten days was completely well.—*Bull. Gén. de Thér.*, Oct. 25, 1884.

In this connection the results of Prof. Prevost's experiments as to the physiological action of paraldehyde, are of special interest. These studies were made on both frogs and mammals, and his conclusions, as announced to the recent International Congress, at Copenhagen, are as follows:

1. Solutions of paraldehyde injected subcutaneously or into the veins, are capable of producing deep anæsthesia, analogous to that produced by chloral.

2. The reflexes in paraldehyde anæsthesia remain much longer than after the use of chloral, and the disappearance of the more constant reflexes (such as the tendon reflex) is invariably a sign of danger.

3. Death is produced through paralysis of the respiratory centre, while the heart dies last, constituting points of strong contrast to the mode of production of death through chloral or chloroform poisoning.

4. As regards its therapeutic application, paraldehyde must be regarded as a hypnotic, and is not at all suited for surgical use as an anæsthetic.—*Zeitschrift für Therapie.*, November 15, 1884.

ANÆSTHETICS AND THEIR ADMINISTRATION.

A recent meeting of the Medical Society of London was entirely given up to the consideration of the articles to employ in cases where anæsthesia is desirable, and the best means of administering those articles, the discussion being opened by a valuable paper by Mr. Woodhouse Braine.

He began by contrasting the relative merits of the various anæsthetic agents now in vogue, saying that we had yet to discover an anæsthetic which was absolutely safe; nevertheless, he thought it incumbent upon us to select some agents in preference to others for the reason that they were safer than others. Anæsthetics might be divided into two classes—(1) Those which produced death through the lungs as well as through the heart; this class included chloroform, bichloride of methylene, dichloride of ethidene, and many others of the chlorine series; (2) Those which produced death through the lungs alone, the heart's action continuing for some time after respiration had quite ceased; this class included ether and nitrous oxide. In the fatal cases under chloroform death was usually instantaneous in the great majority of cases, and began at the heart; when the heart once thoroughly stopped, nothing served to ward off death, while, when respiration stopped, even for a minute or two, with artificial respiration there were good chances of recovery.

In choosing an anæsthetic there were three factors to be considered—(1) The nature of the operation; (2) The amount of insensibility necessary; (3) The length of time during which insensibility had to be kept up. In ovariotomy, for instance, we frequently gave bichloride of methylene; for after the first incision there was little if any pain, and the smallest degree of anæsthesia sufficed. Of all anæsthetic agents, the quickest and safest, but the most

difficult to administer really well, was nitrous oxide; to get its full effect it should be administered pure, all air being rigidly excluded; deep snoring and an insensitive conjunctiva were the best signs of insensibility. Pregnant and suckling women took gas without any deleterious consequences; children, even those who suffered from chorea, or epilepsy, took it well; great age was no bar, he having given it on one occasion to a woman aged 94. From experiments made on himself he had learnt that just before the loss and return of consciousness, the hearing power was greatly intensified, and he warned surgeons to be careful in their remarks, and advised the room to be kept as quiet as possible. As regarded ether, he said the chief reason against its making its way lay in the difficulty of its administration; in unpractised hands there was generally considerable struggling. His usual practice was to induce complete insensibility by means of nitrous oxide, and then to quickly change the face piece for the Ormsby or Dublin inhaler. This ought to be done very rapidly, so that the nitrous oxide which the patient gets rid of by the first subsequent expiration, passed through the sponge and becomes charged with ether for the first inspiration. The cold produced by the rapid evaporation of the ether is often very great, and the sponge becomes frozen into a solid mass, which gives off very little ether vapor. To prevent this the inhaler should be warmed, or the sponge should be wrung out in hot water. The ether then comes off rapidly, very little is required, and, moreover, the patient is quickly under its influence. After complete anæsthesia has been produced in this manner, the sponge may be removed, and the insensibility may be prolonged by allowing the patient to breathe from the india-rubber bag, admitting fresh air only as required. Ether has one great advantage over those anæsthetics which depress the heart's action; for the vessels bleed so freely as the operation proceeds that the surgeon is obliged to tie a much larger number, hence there is seldom secondary or even any subsequent hæmorrhage to interfere with healing. Chloroform tends to produce syncope; whenever this appeared imminent a few whiffs of nitrite of amyl furnished the quickest means of restoring the heart's action. The anæsthetist besides this drug ought always to be provided with a pair of tongue forceps, and the instruments necessary for tracheotomy.

Among the more general points referred to, Mr. Braine spoke of the sickness which follows anæsthetics; that after ether was often caused by large quantities of flatus, and generally took place suddenly and forcibly; that after chloroform was preceded by more faintness and nausea, and took place more quietly. Hiccough was best relieved by a cup of tea without either milk or sugar. Although a great advocate for having the stomach empty, he never would allow a patient to become faint for want of food. If the operation was arranged for about 9 a. m., no food should be taken, unless the patient was *in the habit* of having a small cup of cocoa or something; then this might be allowed, for its privation might cause the patient to feel faint. It was a bad practice to give the breakfast before the usual time, for the stomach, not accustomed to it, failed to digest the unusually early meal. It was always well to examine the organs of respiration and circulation; this examination allowed you to get on good terms with the patient, and it gave him confidence, or in other words, additional cardiac power. Artificial teeth, especially small plates, should always be removed; whole sets were less likely to be swallowed. It was best to ask the patient to open his mouth and to look for oneself. To avoid after-sickness, it was very essential that the patient should not be shaken when being lifted from the operating table to the bed. Except in cases of special debility, the nurse should be instructed not to give any kind of food for three hours. Warm food, he said, kept up the nausea; hence it was better to give all nutriment quite cold until the following morning. He summed up his remarks as follows: (1) It was well to avoid all anæsthetics which tend to depress the heart's action. (2) For short operations nitrous oxide is the best agent. (3) For longer operations, except where it is desirable to avoid hæmorrhage, as in some eye operations, or when the cautery was used, ether answers perfectly. (4) The best time for operating is the early morning. (5) The nasal tubes are of little use. (6) Nitrite of amyl is the best cardiac stimulant.—*Medical Times*, Nov. 29, 1884.

THE TREATMENT OF ACUTE GONORRHŒAL EPIDIDYMITIS BY THE APPLICATION OF CLAY TO THE SCROTUM.

Before describing this method of treatment of epididymitis recommended by Dr. Loucachévitch, a few words as to the popular

employment in Russia of clay as a medicament may not be out of place, particularly as the custom has also the scientific endorsement of Prof. BOTKINE. In the district of Riazane, according to the *Travaux de la Société Médicale de St. Petersbourg* (published in the Russian language) the peasants frequently employ a mixture of clay and vinegar as a cooling local application in fevers. In Wologda the women soothe the pains of hysteria by the application of clay to the soles of the feet; and the Russian surgeons ZABLOTZKI and CHIPOULITZKI, as well as the celebrated PIROGOFF, often employed clay with success in the treatment of aneurism. Prof. BOTKINE also used this same remedy in cases of aneurism of the thoracic aorta, in neuroses of the heart and in the treatment of the disagreeable epigastric pulsations in hysteria.

After the application to a pulsatile tumor of a paste of clay, there follows not only an improvement in the subjective condition of the patient (diminution in the asthmatic symptoms and cardiac pain), but also in the objective condition; the tumor diminishes in volume and (as seen in the case of aneurism of the thoracic aorta) the pulsation becomes more feeble. So also in the reduction of the epigastric pulsation in hysteria the applications of clay at the same time cause a notable reduction in intensity of the other disturbances of the abdominal organs; the vomiting, diarrhœa and abdominal pains disappear. These results Prof. BOTKINE explains as due to the refrigerant action of the clay, and above all to its metallotherapeutic properties.

Recently Dr. LOUCACHÉVITCH has successfully treated several cases of gonorrhœal epididymitis by the application of clay, employing the white moulding clay of sculptors made into a paste with water. A square piece of muslin is covered with a thick layer of this paste, and, while an assistant raises the tumefied scrotum, the dressing is so applied as to cover all the affected region up to the root of the penis and is retained in position by a suspensory bandage, the patient remaining in bed during the treatment. As the clay retains its moisture for some time, it is only necessary to renew this dressing twice daily, morning and evening.

The author assures us that in ten minutes after the application the pain is reduced in intensity and soon disappears completely. On the second or third day the swelling rapidly subsides, but the treatment should be persisted in for four or five days. Up to the present time the author has treated 26 cases by this method, without the use of any other therapeutic measures (such as leeches, etc.,) and in all he obtained a prompt cure.—*Gaz. Médicale de Paris*, Nov. 22, 1884.

THE CLINICAL USES OF PYROGALLIC ACID.

Pyrogallic acid has recently been introduced into therapeutics by Dr. Jahrisch, the assistant to the dermatological clinic at Vienna, as a means of treating psoriasis and venereal ulcers, particularly when accompanied by phagadena, and the favorable results obtained at his hands with this drug have been confirmed by various other physicians, and has lately been made the subject of experimental study by M. FOREST (*Thèse de Paris*, 1883), who calls attention to a caution which must be observed in its use, as when brought in contact with an alkali, such as the blood, it becomes changed into a substance possessed of virulent toxic powers. Although this is well known, the only restriction which has heretofore been enjoined is that it must not be applied over extended surfaces; but this is not sufficient. Numerous cases are on record, when frictions with solutions of pyrogallic acid, in what was supposed to be perfectly safe quantities, have produced violent toxic symptoms; sudden chills, with a reduction of temperature of as much as five degrees centigrade; rapid pulse and respiration, apathy, somnolence and diminution of reflexes, may all be produced by the use of only fifteen grains of this drug. It must be admitted, however, that this quantity is ordinarily well borne by a man, and is rapidly excreted by the kidneys, though only three applications of an ointment containing five per cent. of pyrogallic acid have produced most alarming symptoms.

Pyrogallic acid, therefore, must never be used in larger quantity than from 15 to 25 grains in 24 hours, and must not be applied at one sitting over extended surfaces.

As pyrogallic acid oxidizes very readily into carbon mon-oxide, carbon di-oxide, acetic acid, and probably other unknown substances, it is possible that these reactions also occur within the animal, and its toxic effects may be due not only to the presence of these toxic compounds, but also to the abstraction of oxygen. In those unfortunate cases, therefore, where symptoms of poisoning follows the use of pyrogallic acid, the most rational treatment would be the inhalation of oxygen, and

sustenance of the bodily powers by injections of alcohol and ether.

THE THERAPEUTIC USES OF NITRO-GLYCERINE.

According to MARIEUX (*These de Paris*, 1883), nitro-glycerine, or *trinitrine*, a name which is preferable, as less likely to alarm patients, in *physiological doses* acts on the brain and produces symptoms of congestion. It accelerates the pulsations of the heart, and causes dilatation of the peripheral vessels, apparently by paralysis of the great sympathetic nerve, and so reduces arterial blood-pressure.

It renders the respiration slightly irregular, and is without effect in the secretions.

In *toxic doses* nitro-glycerine produces clonic and toxic convulsions in the lower animals. In man, tonic effects commence to appear after administration of ten drops of a one-per-cent alcoholic solution.

As regards the therapeutic use of nitro-glycerine, it is indicated in all affections where cerebral anæmia exists in a dangerous degree. Its most marked beneficial action is, however, seen in its use in the treatment of angina pectoris, though it is also of service in obstinate neuralgia of anæmic origin. It is without value in all diseases of the kidneys or lungs, and is contra-indicated in every case in which there is either active or passive cerebral congestion.

It should be administered in doses of from four to six drops in twenty-four hours, of a one-per-cent alcoholic solution, well diluted in water; it then causes no disturbance of the digestive apparatus. Or, it may be given in pill form, in which the nitro-glycerine solution is mixed with cocoa butter, and made up with chocolate; or, subcutaneously, when its effects are much more rapid; a smaller dose is then of course required.

It appears, from the above, that the action of nitro-glycerine is very analogous to that of nitrite of amyl, though it is less prompt and sure, but more permanent. In many cases it will be advantageous to combine the nitro-glycerine with nitrite of amyl.

Marieux, therefore, confirms the statements as to the value of this drug, made by Dr. W. E. Green (*Practitioner*, Feb., 1882), though he seems to endorse its use in larger quantities, Dr. Green stating that no more than *one drop* of the one-per-cent alcoholic solution should ever be given at the commencement of treatment. Dr. Green, in addition to the indications for the use of nitro-glycerine already referred to, recommended its use in fatty heart from the analogy claimed to exist between its action and that of digitalis. It is difficult, however, to see on what grounds this similarity is traced. If it proves beneficial in fatty heart, the most probable explanation would seem to be the reduction of arterial tension, and not any direct action on the heart. As noted in the November number of the THERAPEUTIC GAZETTE, nitro-glycerine has also been used with success in the treatment of epileptiform tic douleureux.

ASTHMA IN YOUNG CHILDREN.

At the recent meeting of the French Association for the Advancement of the Sciences, held in Blois, M. PRESSIGNEY read a paper before the medical section on asthma in young children, a disease of much more frequent occurrence, he believes, than is generally realized; since, when questioned, nearly every practitioner will remember having seen asthmatic symptoms in young subjects, and the author states that he himself has seen six such cases in children, two of whom were not yet three years of age. But in these cases the classic picture of asthma, its sudden appearance in the night, and its entire absence in the following day, does not apply to the characters of asthma in children; indeed, this form of asthma is rarely met with even in adults. In the cases observed by the author, the dyspnœa was as apt to persist through the daytime as in the night, though he admits that the paroxysms of suffocation are most frequent at night.

In all his observations the asthma took on a catarrhal form, and could readily be confounded with suffocative bronchitis. But examination of the thoracic organs readily showed that the dyspnœa was not due either to tuberculosis of the peribronchial glands, to disease of the heart, or to emphysema consecutive to chronic bronchitis.

The treatment which he found most efficacious was the internal administration of iodide of potassium and inhalations of oxygen and iodide of ethyl. The latter particularly was most valuable in producing rapid relief of suffocation, though it never succeeded in entirely overcoming the asthmatic symptoms. The treatment must be persisted in until the disease is entirely cured, and even then some deformity of the thorax, and perhaps some pulmonary emphysema may be anticipated

as consequences of the disease.—*La France Médicale*, Nov. 25, 1884.

ETHERIZATION BY THE RECTUM.

Stimulated by the experience of Dr. MOLIERE in the inducement of anæsthesia by the absorption of ether vapor by the rectum, DR. VON STARKE also reports a case in which narcosis was produced in the same manner. The ether vapor was administered by connecting one tube from a Wolff's bottle which contained the ether with an elastic catheter which was inserted in the rectum, while a rubber bulb, such as is used in a Davidson's syringe or spray producer, was connected with the other tubule of the Wolff's bottle. When the bottle was placed in water heated up to 50° C. the ether vapor came off rapidly, the rubber bulb being merely for regulation. The narcosis, with the exception of a momentary stage of violent excitation at the very beginning, was perfectly calm, though marked meteorism was noted. The heart and the respiration were entirely unaffected and there was no cyanotic discoloration of the skin. The narcosis was complete in eight and a half minutes and lasted for fifty minutes, about one ounce of ether being used.

With the exception of the ordinary evidence of intoxication and slight vomiting, no unpleasant after-symptoms were noted. From the slight action on the heart of ether so administered, the author expresses an unfavorable opinion as to the value of subcutaneous injections of ether as a stimulant in collapse.

The author strongly recommends further trial of this method of etherization, for which we are indebted to Pirogoff; it is contra-indicated in cases where the sphincter ani is not perfectly intact, as well as in operations on the intestines or abdominal cavity.—*Wiener Med. Wochenschrift*, Nov. 29, 1884.

THE INFLUENCE OF AGARICIN ON THE PERSPIRATION.

DR. O. PIERING, in the medical clinic of Prof. Pribram, in Prague, has made an extensive trial on the usefulness of agaricin in reducing the secretion by the skin in numerous cases of phthisis, and other lung affections, and in several cases of heart disease, and one case of hemiplegia, where there was profuse perspiration. In nearly all of these agaricin proved itself very efficacious in reducing the the sweating, though in some this effect was not obtained until the drug had been in continued use for nearly a week. The drug was administered in pill form, in doses of 1-12 grain, without the addition of Dover's powder, which had been previously recommended by Wolfenden for the prevention of nausea and diarrhœa, for in the author's hands no such unpleasant result ever complicated the administration of agaricin alone. Doses smaller than 1-12 grain are totally without effect, and as much as 1-6 grain may be given without danger, and nearly always serves to reduce or arrest the most profuse perspiration. Its effects are most striking in the night sweats of phthisis, given in such cases in evening doses of 1-12 grain, increased to 1-6 grain if necessary. The sweating in nearly all cases, even in those at the point of death, is overcome, and the effect will often persist for several days after discontinuing the use of the drug. A reappearance of the sweating is then readily again overcome by smaller doses. Ordinarily, five or six hours are required for the manifestation of the action of the drug. In addition to the reduction of perspiration, cough, when present, is also relieved. The pulse is somewhat increased in frequency, but no elevation of temperature was ever noted. Absolutely no bad effects were ever observed, and its use even in a case of chronic tubercular diarrhœa was followed by improvement. Dr. Piering groups his conclusions as follows (*Centralblatt für die gesammte Therapie*, Nov., 1884):

1. Agaricin is invaluable in reducing the secretion of sweat, especially in cases of phthisis, where it is preferable to atropia.

2. When given to the normal subject, the cutaneous secretion remains entirely unaltered.

3. Also in cases of hyper-secretion the amount of solids excreted by the skin and lungs is unchanged by the use of this drug.

4. The reduction in the amount of sweat is due to a reduced escape of water by the skin, and to an increase in the water eliminated by the kidneys; while thirst being diminished, less water is taken into the economy.

5. Agaricin, in one dose of 1-6 grain, arrests moderately profuse sweating; when the secretion is very profuse, several doses may be required, and its effect may continue for several days.

6. No bad effects were ever observed.

7. In the night-sweat of phthisis the reduction of the cutaneous secretion and cough greatly adds to the comfort of the patient, but no change in the tendency of the case toward a fatal termination is to be expected.

THE TREATMENT OF CORPULENCE ON PHYSIOLOGICAL PRINCIPLES.

As analysed by the *Birmingham Medical Review*, Nov., 1884, EBSTEIN, in his work on corpulence, gives some valuable practical points for the reduction of obesity. According to him, fattening is strictly analogous to the fattening of cattle, and depends on overfeeding. He, however, disputes the current view that fat makes fat; on the contrary, he thinks fatty food protects the albumen and prevents its forming fat. His plan of treatment, therefore, consists in moderating the quantity of food, and while cutting off all vegetable carbo-hydrates, sugar, starch, etc., allowing a moderate quantity of fat, two or three ounces daily, to be taken. He also suggests that the diet should be monotonous, greasy and succulent, so as to cause satiety rapidly. He disallows beer, but permits light wines.

The plan advocated appears rational, and is free from the objection to Banting's method, which is too much like starvation. The following is the diet used successfully by Ebstein in one of his cases:

Breakfast.—One large cup of black tea—about half a pint—without sugar; two ounces of white bread or brown bread, toasted, with plenty of butter.

Dinner.—Soup, often with marrow; from four to six and one-half ounces of roast or boiled meat, vegetables in moderation, leguminous preferably, and cabbages. Turnips were almost, and potatoes altogether excluded. After dinner, a little fresh fruit. For second course, a salad or stewed fruit without sugar. Two or three glasses of light wine, and immediately after dinner a large cup of black tea, without milk or sugar.

Supper.—A large cup of black tea, as before. An egg, a litte fat roast meat, or both, or some ham with its fat, bologna sausage, smoked or fried fish, about one ounce of white bread, well buttered, occasionally a small quantity of cheese, and some fresh fruit.

On this diet the patient lost 20 pounds in six months.

Ebstein insists on the necessity of always keeping to the restricted diet if the tendency to corpulence is to be successfully combated.

THE TREATMENT OF DIARRHŒA BY RESORCIN AND SALICYLIC ACID IN SOLUTION IN CASTOR OIL.

In cases of septic, acute and chronic diarrhœa characterized by fetid dejections and the presence of large numbers of microorganisms in the fecal evacuations DR. O. BOGOUCHE has obtained excellent results through the internal administration of resorcin dissolved in warm castor oil. In this combination resorcin never produces the disagreeable symptoms (ringing in the ears, sweating and dark coloration of the urine) which often follow the use of this drug alone; a result which is explained by the author as attributable to the slower absorption of the resorcin when associated with castor oil.

Resorcin and salicylic acid, as derivatives of carbolic acid are readily soluble in fats and oils when subjected to heat. The author employs the following formula for adults:

℞ Pure Resorcin (by weight), gr. xx
Warm Castor Oil, ℥ iv ss
S. To be taken as a single dose.

For children above four years of age seven and a half grains of resorcin may be given in correspondingly reduced quantities of castor oil.

Among the cases of cure obtained by this plan of treatment cited by the author, is one of a child who for six months had suffered from a fetid diarrhoea, which had proved entirely rebellious to all the usual plans of treatment; under the use of resorcin in castor oil a prompt cure was obtained.

The author also recommends the trial of this method in Asiatic cholera, with the hope that the resorcin will destroy the cholera bacilli. A mixture of resorcin and salicylic acid, likewise dissolved in castor oil, might also be useful in cholera in overcoming the alkalinity of the dejections.

In conclusion, attention may be drawn to the analogy between this method of treatment of diarrhœa by an antiseptic with that recently advocated by Prof. ROSSBACH, and described on page 459 of THE THERAPEUTIC GAZETTE for 1884.—*Gazette Médicale de Paris*, Nov. 22, 1884.

A NEW ANTISEPTIC—TRICHLOROACETIC ACID.

Trichloroacetic acid (CCl_3Co_2H), accord to DR. FILIPPOWITCH, is a powerful antiseptic even in 0. 2 per cent. solutions, while in 1 per cent or 2 per cent. solutions it destroys all forms of organic life; in. 5 per cent. it does not arrest the growth of yeast, but does that of bacteria and micrococci. In comparing its antiseptic power with that of other well-known

agents, the author obtained the following scale of decreasing intensity: Corrosive sublimate, carbolic acid, trichloroacetic acid, chloride of zinc, borax, and permanganate of potassium.

Trichloroacetic acid is a crystalline body, readily soluble in water and alcohol, and of an agreeable odor. It coagulates albumin and its concentrated solutions are caustic. Diluted solutions produce a hypersecretion of saliva and destroy entirely the power of the saliva of converting starch into sugar and arrest the digestive action of pepsine; in concentrated solutions it precipitates pepsine and peptones.

The author has employed this substance as an antiseptic remedy in various affections. Putrid and indolent wounds under the application of dressings soaked in weak solutions (which are entirely unirritating), are soon covered with healthy granulations and rapidly heal. It is also an excellent remedy in erysipelas and in the treatment of the fissures of the skin which often occur in œdematous parts, while in the treatment of venereal sores it is not inferior to iodoform.

Internally, trichloroacetic acid has been used by the author in cases of gastric catarrh, where its employment produced amelioration of the symptoms; in the summer complaint of children, where it produced a cure; and in carcinoma of the stomach, with subsequent diminution of vomiting.

For external use this remedy may be employed in 1 or 2 per cent. solutions; internally to adults 2 to 5 grains of the acid in very dilute solution may be given three times a day, while to children ½ to 1 grain may be given four times daily.

He also recommends this remedy as a preventive of cholera in doses of from 2 to 3 grains three or four times daily.—*Gazette Médicale de Paris*, Nov. 22, 1884.

THE TREATMENT OF VARIOUS INTESTINAL DISORDERS WITH NAPHTHALIN.

At the third meeting of the German Congress for Internal Medicine, ROSSBACH read a communication on the favorable action of naphthalin in different intestinal disorders, and he has recently published a series of cases which confirm the opinion then expressed as to the value of this remedy.

Commercial naphthalin is contaminated with various other substances, and must, therefore, before being suitable for medicinal purposes, be washed with alcohol on a filter until all color is removed, and then dried and sublimed, when it occurs in the form of large pure white crystals. In this state it may be given for weeks in daily doses of 75 grains without producing any bad effects, while its complete insolubility causes it to be removed from the body with the feces, thus permitting its action on the lower portion of the bowels.

Naphthalin is especially efficacious in cases of chronic diarrhœa, which, according to NOTHNAGEL, is most often due to intestinal ulcers, and in acute diarrhœa; also in the vomiting and diarrhœa of children it is quite as efficacious as calomel. The most interesting of the author's observations, however, are those which relate to the use of naphthalin in typhoid fever. In some of these cases the disease appeared to be aborted in five or six days; in others the temperature gradually sank to normal and remained constant under the use of the drug, even though the spleen was enlarged.

In one case fever was entirely absent for fifteen days under the use of naphthalin, and the temperature increased as soon as its employment was suspended; and in another case in which both cold and quinine had failed in reducing the temperature, the fever was reduced as soon as naphthalin was included in the treatment.

ROSSBACH does not claim that naphthalin directly reduces the fever, but, through counteracting the morbid process in the intestine seems to remove one source of the febrile process. It must be admitted, however, that in some cases of typhoid fever, particularly those which are not brought under treatment until the second week of the disease, this drug is entirely without effect. ROSSBACH also believes it well worth while to try naphthalin in early stages of cholera before violent vomiting sets in.

The author invariably gives naphthalin internally in the form of a powder with white sugar and oil of bergamot, preferably in capsules. His formula is:

℞ **Purified naphthalin,**
White sugar ää gr. lxxv.
Oil bergamot, gtt. ss.

M. f. p. Div. in part. aeq. No. xx.

S. To be given in four doses in twenty-four hours.

Naphthalin is not well adapted for use in enemata, as it is entirely insoluble in water.—*St. Petersburger Med. Wochenschrift*, Nov. 15 1884.

THE USE OF COCAIN IN ACUTE AND CHRONIC AFFECTIONS OF THE LARYNX AND PHARYNX.

DR. CHRISTOPHER J. LEWIS (*Birmingham Med. Review*, Dec. 1884) adds another to the already long list of papers extolling the local anæsthetic virtues of cocain, though in this case the upper portions of the respiratory mucous membrane having been the seat of action, the conjunctiva has escaped. Unfortunately, nearly as long a list could be made of the papers which deny the possession of any anæsthetic properties by this drug, so there must be some reason for the discrepancy of results obtained by apparently equally capable observers.

The first explanation that naturally suggests itself is, of course, that a pure (or might it be an impure?) drug has not been employed; or it may be that in some of the unsuccessful trials the pure alkaloid has been employed, a preparation which is generally acknowledged as inferior to Merck's preparation of the hydrochlorate. This is the article which is used in PROF. SCHRÆTLER'S clinic in Vienna, where DR JELINCK, the author of the earliest experiments made with this drug in this connection, is assistant, and the data which DR. LEWIS details were obtained from his personal observation of the results there obtained.

He states that when a ten per-cent. solution is applied to the mucous membrane, after an interval of a minute or so, it diminishes sensibility to touch and temperature; it reduces swelling of the mucous membrane; it modifies existing pain; and finally it lessens reflex excitability.

By possessing these last two qualities, it has the power of facilitating laryngeal and rhinoscopic examinations on the one hand, and the performance of endo-laryngeal operations on the other; and further, by producing a diminished sensitiveness to pain it relieves in a remarkable manner cases of distressing dysphagia which have resisted other methods of treatment.

In ordinary cases a 10 per-cent. solution will answer, but a 20 per-cent. solution will be required when it is used to lessen sensibility in operative treatment. For pharyngeal purposes, it is well that it should be used by means of a small swab made of absorbent cotten wool, while for a larynx a thick soft brush is preferable, using the laryngeal mirror to guide the application of the brush. The solution is to be freely applied to the whole of the mucous membrane, and its effects will be noticed in about a minute or a minute and a half. It is well afterwards to test the state of the membrane, either with a probe, or a laryngeal sound, and if the local anæsthesia is not found complete, to make another application, and as a rule, after the lapse of one minute the membrane will be sufficiently anæsthetized to allow one to commence the operation. The effect lasts from ten to about fifteen minutes. It has been observed, and is worth noticing, that if, by a too free application we excite an excessive flow of saliva, the latter interferes with the active principle of the drug, and so we are liable to disappointment unless we apply it with care. And again, an alcoholic solution should not be used, when we have to deal with an inflamed surface, for alcohol under such circumstances becomes an irritant, and so modifies the analgesic action. For endo-laryngeal operations the 20 per-cent. alcohol solution which is applied at Vienna is: Cocaine mur., 1 gramme; sp. vini rect., 2 grammes; aq. destill., 3 grammes.

PEROSMIC ACID IN THE TREATMENT OF NEURALGIA.

Following the example set by Eulenberg, DR. D. MOHR (*Wiener Med. Wochenschrift*, Nov. 22, 1884), reports a case of peripheral neuralgia in which perosmic acid, administered subcutaneously, was successful in procuring relief, adding that a similarly favorable result was obtained in several other instances.

Dr. Mohr also further confirms Eulenberg's statement that to be efficacious the acid must be freshly prepared and employed before decomposition commences. He used a one-per-cent. solution of which a hypodermic syringeful was injected in the locality pointed out by the patient as being the seat of greatest pain. The case was that of a sciatica in a woman 65 years of age, otherwise in perfectly good health. Movements of the right lower extremity produced the most intense pain. On examination the entire sciatic region was found to be extremely sensitive to pressure and to movement, as in walking; rheumatism could be excluded from the diagnosis from the fact that the patient could designate the seats of most intense pain with the finger tip, and not, as would apt to be the case with rheumatism, with the entire hand. Coxiti was also excluded by the absence of the characteristic signs in careful local examination, while that the case was one of pure neuralgia was further proved by the presence

of marked motor and vaso-motor disturbances.

For the first few days after the employment of the usual remedies, no apparent benefit could be detected. An injection of perosmic acid was then made in the neighborhood of the ischiatic foramen, and was followed by almost instant relief of pain. No inflammatory reaction followed, and the improvement in condition was maintained until the next day, when a second injection was made. The patient then declared herself entirely free from pain, and was able to move her lower extremities with perfect freedom.

Dr. Redtenbacher (*Deutsche Medizinal Zeitung*, 1884, No. 95,) has been equally successful in the treatment of an old intercostal and brachial neuralgia, in a man 70 years of age, by the subcutaneous injection, once a week, of a syringeful of a one-per-cent. solution of perosmic acid. After six injections a phlegmonous dermatitis was developed, which was three weeks in healing. The neuralgia, which previously had occurred every day with the greatest violence, was now often absent three or four days at a time, and when the attacks came on they were of much less severity, even though the injections were solely made at the painful spot on the arm. After the cure of the dermatitis the treatment was renewed, only a half-syringeful being now employed, and no further inflammation of the skin resulted.

This complication evidently was due to rapid deoxidation of the acid; therefore only small quantities of the solution should be prepared at one time, and great care should be observed in employing only the fresh solution.

Reviews.

Student's Manual of Electro-Therapeutics Embodying Lectures Delivered in the Course on Therapeutics at the Woman's Medical College of the New York Infirmary. By R. W. Amidon, A. M., M. D., Secretary of the American Neurological Association; Member of the New York Neurological Society, etc. Pp. 93.

New York: G. P. Putnam's Sons, 1884.

Dr. Amidon's little book is destined to become popular, not only with students, but also with practitioners who have time only for the wheat of the many much-belabored special subjects in medicine.

Electro-Therapeutics has been a great sufferer at the hands of book-makers. Books small and large; books illustrated and not illustrated and badly illustrated; books of much margin and little text, and others of much text and little margin; books of facts from experience, and books in which the imagination has been drawn upon, both for "facts" and "experience;" books scientific, unscientific and too scientific—have appeared in large numbers on the subject of medical electricity during the last ten or fifteen years. Most of them have been volumes in which the chaff by far exceeded the wheat. Not a few have been written simply and solely to advertise apparatus-makers and would-be medical electricians. Some, although not without faults, have had real and distinctive merits, and among these we would put the works of Poore, Erb, de Watteville, and now of Amidon.

The aim of the author has been well carried out. That aim, as stated in the preface, is:

"First—To present the amount of the subject of electro-physics necessary to the proper understanding of the construction and use of medical batteries.

"Second—To point out the commonest, gross, physiological effects of electricity.

"Third—To outline the methods of electro-diagnosis.

"Fourth—To determine the kind of electricity, and its mode of application indicated in the different pathological states."

Under the electro-physics the definition and explanation of such terms as potential, resistance, Ohm, Volt, Weber, etc., are placed concisely but clearly before the reader. The medical bearings of these terms are also shown. The demonstrations of Ohm's law, and of the application of this law to the construction of batteries for different purposes, are readily followed.

The subject of nerve degeneration and the reactions of degeneration are lucidly set forth without the diffuseness of Erb.

The views on the therapeutics of electricity are, on the whole, sound and sensible. Amidon does not claim to cure everything by electricity; indeed, he does not claim to cure many diseases by this instrumentality. He shows that electricity has a real although comparatively restricted field of usefulness. We do not always agree with him, as, for instance, when he says writers' cramp is not much helped by electrical treatment. He is, however, usually correct, showing that he has

had a large practical experience. He pricks some electro-therapeutic bubbles, and gives us a good working text-book, the striking characteristics of which are common sense and condensation.

THE BASIC PATHOLOGY AND SPECIFIC TREATMENT OF Diphtheria, Typhoid, Zymotic, Septic, Scorbutic, Putrescent and Mephitic Diseases Generally. By Geo. T. Ziegler, M. D.
Philadelphia: Geo. J. Ziegler. 1884.

This book is a terror; indeed we know of no place where so much of terror can be purchased for two dollars as in the store that retails this work. The pathology is remarkable, but woe betide the unfortunate reviewer whose conscience is so sensitive that he has to read and ponder over the sentences of the work. Sons of Anak are these sentences, among sentences. Yes (if our readers will allow us to do as does Shakespeare, change the metaphor), veritable ten-story tenement houses of sentences. Seizing one at random, but with great caution, and holding it only long enough to count its members, we find 343 words. Selecting a weaker sentence, so that we can hold it longer, we find that of its 185 words 120 are of seven letters or over, a majority of all these words requiring more than eight Roman characters to fill out their noble proportion.

We confess that we have not read the book. Where is the man that has and lives; but we have examined it with care. And this is what it is attempted to be proven and taught in it: namely, that excess of alkali is at the basis of most all diseases to which human flesh is heir, and that mineral and vegetable acids are the universal remedies which a kind Providence has showered upon a race hitherto so unregenerate and so blind as not to recognize the blessing. The prophet of the new dispensation has, however, appeared, and it behooves us to see to it, and now when this prophet has spoken we harden not our hearts as did the Pharaoh of old and thereby suffer plagues more than those before.

HOLDEN'S ANATOMY. A MANUAL OF DISSECTION OF THE HUMAN BODY.—By Luther Holden. Late President of the Royal College of Surgeons of England, Consulting Surgeon to St. Bartholomew's and the Foundling Hospitals. Fifth Edition. Edited by John Langton, Surgeon to, and Lecturer on Anatomy at St. Bartholomew's Hospital. Member of the Board of Examiners, Royal College of Surgeons of England. With over two hundred illustrations.
Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut St. 1885.
Detroit: John McFarlane.

Holden's Manual of Anatomy has reached a volume in size of over 850 pages, and was written entirely from actual observation. "In this edition the editor has most carefully revised the entire work. The order of dissection has been here and there altered, and further illustrations and additional matter introduced, especially concerning the anatomy of the nervous system and the organs of special sense." Reference to the illustrations are partly after Quain and partly after Gray, but are not as full as either. It is, however, better calculated for the dissecting room. For this latter purpose it is admirable, and meets our commendation. It is handsomely printed on strong, white paper, with a large, clear type, making it still more useful for the student when required during the process of dissection. It is the best manual we now know of.

DOCTRINES OF THE CIRCULATION. By J. C. Dalton, M. D.
Philadelphia: Henry C. Lea's Son & Co., 1884.

The American mind is in its tendency practical: to seize the present, forget the past, save only as from it can be snatched that which can be applied day by day, and to hurry on to the future—this is what fifty millions of people are in accord in doing. We are, at best, scientific and thorough in our knowledge of the latest novelties, rather than learned and scholarly in the old lore. Therefore, are we startled when a book appears, like this of Prof. Dalton's, tracing out, step by step, the history of the growth through centuries of a scientific dogma to its final emergence from the cloud and fog of imaginary theories to the firm ground of established truth. Therefore, we wonder whether this pæan to the past is, after all, a new American birth, and has not rather stalked into our literature from some confine of the older world.

The clear thought, clothed appropriately in its word-garments, marks the brochure as a classic, and we can but acknowledge its author to be a master in the history of physiological science, as well as an adept in its latest methods.

PHARMACOPŒIA, for the Treatment of the Larynx and Nasal Passages, with remarks on the Selection of Remedies and Choice of Instruments, and on the Method of Making Local Applications. By George Morewood Lefferts, A. M., M. D., Clinical

Professor of Laryngology and Diseases of the Throat, College of Physicians and Surgeons, Medical Department of Columbia College, New York. Second Edition. Revised and Enlarged.

New York and London: G. P. Putnam's Sons. 1884.
Detroit: J. MacFarlane.

This little brochure discusses the modus operandi and application of instruments and medicine for the cure of diseases of the larynx, pharynx, and nasal passages. It also gives a description of the instruments employed. To the specialist we have no doubt it will be of considerable usefulness.

THE ELEMENTS OF PHYSIOLOGICAL PHYSICS, An Outline of the Elementary Facts, Principles and Methods of Physics, and Their Application in Physiology. By J. McGregor Robertson, M. A., M. B., C. M., Muirhead Demonstrator of Physiology, and Assistant to the Professor of Physiology in the University of Glasgow. Illustrated with 219 engravings on Wood.

Philadelphia: Henry C. Lea's Son & Co. 1884.
Detroit: Philips & Hunt.

This is one of a series of manuals for medical students. In conception they are well enough, and perhaps convenient. The one before us is as useful to the ordinary student or reader as to the medical student, and probably more interesting. As we have seen only an occasional number, we cannot speak for the series as a whole. The present number contains much valuable information.

We are under obligations to the Secretary of the Pennsylvania State Medical Society for a copy of its bound transactions for 1884. It is handsomely issued, and the contents bear the impress of the intelligence of its members. Should our space permit, we will be pleased to refer to individual papers in the future.

Correspondence.

SIERRA SALVIA.

To the Editors of the THERAPEUTIC GAZETTE.

I have before had the honor of communicating through your journal some observations as to the medical properties of the local plant found among the east slopes of the foot hills of the Rocky Mountains, known here as "Mountain Sage," or "Sierra Salvia." My first report referred to its use in malarial or cerebro-spinal congestions, derived from a clinical record in such cases, and first noted in my own case during an attack of mountain fever, so called. The second list of cases was confined to some instances of its use in the treatment of chronic alcoholism, especially in connection with the combination of capsicum. This herb has attracted quite a wide field of investigation from different authorities, as noticed in the medical literature of this state of the past year. I have taken occasion, at intervals during the past six months, to personally inquire of the native Mexicans and Indians of southwestern Colorado and northern New Mexico as to their uses of the plant, and whilst the hereditary tendency of those races is to observe the most profound reticence as to all matters pertaining to the arts of the medicine man, I have learned that it has been the chief reliance in all cases wherein the office of the skin and kidneys is involved, and with another shrub found in the timber belt of the mountains, known as "Oregon Grape," the sage infusion made a complete outfit for the healer's combinations. Some of their traditionary teachings reach back for over a century, and for the greater part of that time they must, from necessity, have relied upon the home supply of medicine, as no commerce from the east was carried on, excepting such supplies as the trappers and fur dealers introduced, and among them it became the usual practice to resort to the natives for medical advice in local complaints. Nature seems to have provided, therefore, this extended region, isolated from civilization on the one hand by the waterless plains, and the mountain heights on the other, by a perennial growth which allayed the ills of a people who lived in thickly settled towns (Pueblos), and were subject to all the maladies of other forms of civilization. Not unlike them did our ancestors, only a few years since, rely upon the local remedies of New England bottoms and the bleak forests, boneset, Eupatorium perfoliatum and blood-root, Sanguinaria canadensis, or the elder, Sambucus, and balsams, and, in fact, of late the large accession to the stock of our better remedies are from regions until lately beyond the limits of trade intercourse or the chemical laboratory. In a recent publication of an English traveler, Mr. St. Johnston, he discloses the fact that in the Samoan group of islands the natives use a neurotic that surpasses anything known in the English or German pharmacopœia. In the uses of this sage I have taken an interest, which may have escaped others, and might have, also, my observation, had I not at times

been compelled to resort to its use. I have some memoranda of cases, from the family of contagious diseases, eruptive and non-eruptive, which would naturally fall in the line of such remedies as act so promptly through the skin or kidneys, since the office of one is to supplement the other. In those of scarlatina it seemed the most efficient of any treatment used, and, with the exception of those of the throat, controlled the entire train of symptoms; likewise did it in measles and whooping-cough, when the invalid was not too young, and I should have trusted it to the exclusion of any or every other relief had it been my misfortune to find a case of varioloid. From my prior minutes of its office and the characteristics of the latter, it could not have been contra-indicated. In diphtheria I have used it, not frequently, because the disease rarely occurs in this section, but in several instances it was all I did apply, excepting a local relief for pharyngeal affections. If properly understood it acts more promptly and with greater satisfaction than anything I have secured, when these acute affections of the skin, mucous or serous surfaces are involved. I have at no time had an unpleasant sequel in cases of scarlatina or diphtheria, and as the season is now at hand when these terrible ills surround us, it may be of interest to others to test its merits. It was only after a year or two that I became clear as to its use, as I now regard the best method of combining either the fluid extract or the leaf packages. I am using both the extract and packages as prepared for the market by Parke, Davis & Co., Detroit, excepting in the season when it may be taken from the fields. I prefer the leaf infusions for skin cases, and as a diuretic the diluted fluid extract. My custom is to use it in the early history of a lung exposure, or acute catarrh of the pharynx, or bronchi, by giving it as hot as may be tolerated and made as follows: I use a porcelain or earthenware vessel only, and pour over about one drachm of the leaves, flowers, etc., as found in the dried packages, or one-half teaspoonful of fluid extract, water boiling hot to the measure of one pint, and cover the vessel as tightly as possible, before setting it aside; in case of the fluid extract, it may be cooled and used as early as convenient, and in the use of the leaf package, it is ready for use when the fibres of sage settle to the bottom of the bowl, and the clear amber-colored fluid can be poured off, even without straining, although it is better to use a fine tea-strainer, or cloth mesh to isolate all particles. I then use the juice of from one half to a whole lemon to the pint of infusion, and sweeten to each individual taste. It should be administered, to the adult, by the wine-glassful, and to children in proportionate amounts, and given every half-hour till free excretion from the skin or kidneys succeeds, and best results are secured by the patient lying in bed well wrapped, as sleep usually intervenes, and all nervous symptoms from this time subside. When a long-continued action on the kidneys is desired, as in the convalescent stage of scarlatina or diphtheria, it should be given cold, a wine-glassful before each meal, about quarter of an hour, and before retiring. Be sure and take enough to secure prompt action of skin and kidneys, is the law, and whilst the above is the result of of my observation and my practice, I have had occasion to substitute a goblet for a wine-glass. If, however, one endeavors to use it not sufficiently diluted, it will nauseate, and the distaste becomes a torture. The taste is readily modified in combination with many acids, but as the lemon, bruised and cut up in it, is never amiss with these cases, I am inclined to favor it above all others I have tested.

A. COMSTOCK, M. D.

SILVER CLIFF, Col., Dec. 22, 1884.

SUBSTITUTE FOR CITRINE OINTMENT.

DR. H. C. WOOD.

Dear Sir:—I send, by Adams' Express, a sample of what I term Ol. Gossypii et Hydrarg Nit.; it is of the same strength as the officinal Citrine Ointment, and I think a much finer preparation.

The formula is:

Mercury, 444 grs.
Nit. acid, 13 drachms.
Cotton Seed Oil, 11 ounces.

Heat the cotton seed oil to the boiling point in a glass or porcelain vessel of the capacity of one gallon, then add to the oil five drachms nitric acid (a small quantity at a time) stirring constantly until effervescence ceases. Dissolve the mercury in one ounce nitric acid without heat and add to the oil when cool. Please give me your opinion in regard to it, and oblige,

A. B. HINES, M. D.

WASHINGTON, October 10th, 1884.
2205 I STREET, N. W.

[At present writing, the specimen is a dark, very thick, brownish-red liquid, which might be substituted for citrine ointment, but extended therapeutic trial alone could justify the declaration of its equality with that long-used, much-tried officinal. H. C. W.]

THE ANÆSTHETIC ACTION OF CAFFEINE ON THE EYE.

To the Editors of the THERAPEUTIC GAZETTE.

I experimented last night upon four resident physicians at the Philadelphia Hospital, including myself, with the saturated solution of caffeine citrate which you gave me, as to its influence in deadening the sensibility of the cornea and conjunctiva.

We made two applications to each one of us, allowing five minutes interval between the first and second, and then testing for anæsthesia with a broom whisk. We ascertained the normal irritability before using the drug. The result certainly appeared negative, except in the case of Dr. Jenkins, who thought he experienced a very slight deadening effect. The other two and myself found no diminution of the irritability of the cornea and scleral conjunctiva.

I have since seen in the *Medical News* of Nov. 8th, that Dr. Knapp experimented with the salts of caffeine and theine, and was also unsuccessful in producing anæsthesia.

GEO. E. DAY.

PHILADELPHIA HOSPITAL, Dec. 1, 1884.

TREATMENT OF NEURALGIA WITH GELSEMIUM.

To the Editors of the THERAPEUTIC GAZETTE.

Gentlemen—I see in the THERAPEUTIC GAZETTE of November last, an article entitled "The Action of Gelsemium," by A. N. Hume, M. D., of Owosso, Mich., followed by one from E. Chenery, of Boston, Mass. They take the ground that in facial and other neuralgias to get any benefit from this drug it is necessary to push it until its physiological effects are produced. This position is unmistakably true. Twenty-five years ago I had quite a large experience with it and just on that account abandoned it. Not because it is not a good thing, but because there are other things which will do all it will do without the annoying physiological effects which it produces. My patients repeatedly told me they would as soon have their neuralgia as suffer the way they did from the medicine.

In facial neuralgia one hypodermic injection of ergot is worth all the gelsemium in the universe.

J. T. STEWART, M. D.

PEORIA, Ill., Dec. 23, 1884.

Notes and Queries.

FACTS FOR ANTI-VIVISECTIONISTS.

As we believe vivisection is a necessity for medical progress; and as anything which we might write would be considered partisan by some, if not many, of the American voters upon whom rests the government of this country, we venture to republish the following from the *London Times*, and hope that our readers will use it and its arguments in influencing the opinions of their patients:

A return just published, showing the number of experiments performed upon living animals during the year 1883 under the vivisection act, is a somewhat remarkable document. It appears that in England and Scotland 44 persons have held licenses under the act during some part of that year, of whom 32 performed experiments and 12 performed none. In Ireland 8 persons held licenses, of whom only 4 performed experiments. The total number of experiments of all kinds was 535 in England and Scotland, and 34 in Ireland. Of these 290 were barred out under the restrictions of the license alone, 55 under special certificates dispensing with the use of anæsthetics, and 122 under certificates dispensing with the obligation to kill the animal before recovering from anæsthesia. Under certificates permitting experiments on cats, dogs, horses, mules, and asses there were 102 operations, but it appears that only four or five were upon cats or dogs, and none at all upon the other animals named. As regards the 200 cases first mentioned, together with a number carried out under certificates prescribing anæsthetics, the animals were rendered insensible during the whole of the operations, and were not allowed to regain sensibility. Their sufferings are accordingly quite unappreciable by the most acute sympathizer. The 55 experiments without anæsthetics consisted in simple inoculation or hypodermic injection with morbid matter

whose operation it was desired to discover, and the pain inflicted was at the most that of ordinary vaccination and its results. Of the 122 experiments in which the animals were allowed to regain sensibility, 114 also consisted principally in inoculation, and were for the most part connected with an important inquiry into the nature of tubercular affections. No pain was inflicted save in some 14 or 15 instances, and even in these it was trifling. In the remaining eight cases anæsthetics were used, and though the surgical operations amounted to more that a mere puncture, the pain would be only that usually attending the healing of a surgical wound. The experiments upon cats and dogs are classified under the heads already mentioned. The conclusion of the inspector's report is that "the amount of direct or indirect suffering from the performance of physiological experiments during the past year was wholly insignificant, and limited to about 14 or 15 animals."

We venture humbly to hope, though we cannot feel very confident, that our humanitarians will be satisfied with this proof of the very narrow limits within which men of science can indulge that love of torture which physiological knowledge is supposed by those who have none of it to produce. Sport, fashion, caprice, thoughtlessness, and ignorance are every day inflicting even in exquisitely sensitive circles, a larger amount of animal suffering than stringent supervision can lay at the door of science for a whole year. The yelping terriers and pampered pugs upon which ladies lavish their caresses, have undergone far greater agonies before they were fitted for the enviable position they occupy, than were suffered by the most hardly used of the fifteen animals that became temporary martyrs to the endeavor to find a remedy for one of the greatest scourges of humanity. A rainy day inflicts more pain in a single London street upon the horses that minister to our needs or our pleasures, than science is chargeable with for twelve months. It is, however, as vain to reason with a morbid sentiment as it is to combat a congenital antipathy. To the anti-vivisectionist a lancet prick inflicted in the pursuit of knowledge is more odious than the whole mass of animal suffering around him, and the imagined yell of an inoculated cat drowns the cry of human suffering which science alone can relieve. A return such as that before us may, however, have a good effect in curbing the anti-scientific imagination. Its cool statement and precise figures lay the length and breadth of the evil before us, and sensitive people can no longer work themselves into frenzy by picturing every physiologist as surrounded by wretched animals writhing under his refined tortures. As a shying horse is led quietly up to the gate post or the shrub that his equine imagination has invested with terror, so may our humanitarians be invited to look closely and long at the actual proportions of their bugbear. The majority of animals operated upon die painlessly under the influence of anæsthetics, or recover from their influence quite unconscious of the vivisection they have undergone, while a certain number endure the inconvenience to which all our babies are put, and which they voluntarily undergo again if they grow up in the light of science. A mere handful in the course of a year either suffer from the tuberculosis which sweeps away so many of our fellow-men, or have to endure the pain of recovery from a surgical operation trifling in comparison with those daily performed in our hospitals. There we have the dimensions of the evil that seems to scare some of our friends almost into hysterics. If they persist in denouncing the act as inadequate they must be taken to hold that the chief duty of man upon earth is to shield the inferior animals—if we may call them so—from all participation in the ills that human flesh is heir to. In that case we really have the right to call upon them to be consistent, and to devote themselves to the abolition of animal suffering far more severe and widespread than any that science inflicts.

URINARY INCONTINENCE IN CHILDHOOD—A SUGGESTION.

In the November number Dr. Bruce asks, "If any of the readers of the THERAPEUTIC GAZETTE will favor him with their experience in the treatment of this sometimes most obstinate complaint." My experience with belladonna, cantharides, rhus aromat, etc., has not been satisfactory. I have, however, looked at this subject from another point of view, and acted on the theory that the complaint is frequently an epilepsy of the bladder; and as I had found pot. bromide an abortive remedy during the early stages of epilepsy, I reasoned that it might also be valuable in this complaint. The following will

be found a convenient and pleasant mode of administration for a patient ten years of age:

℞ Pot. Bromid. ʒiss. to ʒii.
Tr. Nucis Vom. ♏ viii.
Syp. Zingib.
Aq. Rosæ ää ʒi.

Teaspoonful after dinner and supper, in water. The nux vomica is added as a nerve tonic.

Of course the absence of all structural lesions must be ascertained, particularly a contracted condition of the prepuce; the regimen of the most nourishing nature; and the mother or nurse instructed to see that the bladder is emptied at bed-time.

JOHN PORTER, M. D.

McKEESPORT, Pa.

TREATMENT OF CORYZA IN CHILDREN.

M. FILATOW (*Gazette Méd. de Paris*, Nov. 1, 1884) recommends the employment of the following formula in the treatment of the coryza of children:

℞ Muriate of quinine, 1 part.
Glycerin. 15 parts.

M. S.—Two or three drops are to be applied to the nasal mucous membrane three or four times daily by means of a camel's hair brush.

The dry and fatiguing cough which often accompanies infantile coryza may be relieved by the following:

℞ Laurel water, gtt. v. to viij.
Distilled water, ʒii.

M. S.—Teaspoonful every two hours.

When an epidemic of influenza is existing and there may be grounds for regarding the coryza as a prelude to this affection, it may often be aborted by the early administration of sulphate of quinine in doses of from 1 to 3 grains to children of one year of age or under, and in doses of 4 or 5 grains to children from one to three years old.

CORN CURES.

M. P. VIGIER has examined a number of the secret remedies recommended as cures for corns, and thinks that the following formula very closely resembles them:

℞ Salicylic acid, gr. xv.
Alcoholic extr. cannabis indica, gr. vijss.
Alcohol (90 per cent.), ♏xvi.
Ether, ♏xl.
Elastic collodion, gr. lxxv.

M. To be preserved in a tightly-corked flask.

In employing this remedy a brush or the end of a match stick is to be dipped into the mixture, and rubbed several times over the excrescence every other day for a week. After a few applications the corn is readily removed with the finger after a warm foot-bath.—*La France Médicale*, Nov. 22, 1884.

URINARY INCONTINENCE IN CHILDREN.

In reference to the query of Dr. A. G. Bruce, as to the treatment of urinary incontinence in children, in the November number of the GAZETTE, Dr. W. J. Willim, of Atlantic, Iowa, suggests the employment of tr. ferri chloridi in doses of 5 to 10 drops three times daily. He states that he has used this drug in a number of such cases, and in nearly all it has given almost instant relief. In some cases, however, the incontinence may be due to an elongated pepuce; circumcision is then indicated.

[In some instances the reaction of the urine will be found to be abnormally acid from excess of uric acid, which will be found in crystalline form on microscopic examination of the urine. Alkalies and the reduction in the amount of nitrogenous food, particularly in the evening meal, are then indicated. —ED.]

LIEBIG'S FIT CURE.

To the Editors of the THERAPEUTIC GAZETTE:

Gentlemen—Can you inform me as to the nature of the so-called Liebig's fit cure, sold by Dr. A. Messerole, of New York? It is certified to contain *no bromide* of potassium.

INQUIRER.

[One of the editors of the GAZETTE has under his care an epileptic patient in whom well-pronounced bromism was produced by Liebig's fit cure, and analysis has shown the latter to be a very concentrated solution of bromide of ammonium. The certificate which accompanies the drug is literally correct, as no potassium could be detected in the solution; but it is practically false, and intended to deceive. All the alkaline bromides have similar action upon the system, and are about equally

capable of producing disagreeable and dangerous symptoms. H. C. W.]

INJECTIONS OF TURPENTINE IN THE TREATMENT OF MALIGNANT TUMORS.

PROF. VOGT claims to have caused the partial or total disappearance of certain malignant tumors (carcinoma, sarcoma) by the injection into the mass of the neoplasm of a hypodermic syringe-full of the following emulsion:

℞ Essence of turpentine, 1 part.
Alcohol, one or two parts.

M. S.—These injections develope a local reaction under the form of an erysipelatous redness with painful swelling of the skin, and a general febrile reaction in which the temperature may reach 103° F. and last for about one week.—*Gazette Méd. de Paris*, Oct. 25, 1884.

TREATMENT OF FROST-BITE.

To the Editors of the THERAPEUTIC GAZETTE.

I have found the following prescription excellent in frost-bite, and I hope you will give it a place, so all can give it a trial:

℞ Vaseline ℥ i.
Spts. turpentine, ℥ j.
Acid carbolic gtt. x.

The vaseline and turpentine to be rubbed up together in a mortar, and the acid dropped in after.

This is being prescribed by Dr. James R. Leaming, and many other able men here in New York. It is, I think, a certain cure for this troublesome ill. Try it.

L. G. DOANE, M. D.

INJECTION OF CORROSIVE SUBLIMATE IN GONORRHŒAL RHEUMATISM.

PROF. VOGT, of Greifswald, has employed the following treatment with success in three cases of rebellious gonorrhœal arthritis:

℞ Bichloride of Mercury, gr. ii.
Chloride of Sodium, gr. xv.
Distilled water, ℥ iss.

M. S.—Of this solution enough should be injected every three days in the neighborhood of the affected joints to amount to 1-6 grain of the corrosive sublimate.

Massage and methodical gymnastics should be combined with the treatment.—*Gazette Méd. de Paris*, Oct. 25, 1884.

RESORCIN AS A PREVENTIVE OF VOMITING.

Dr. Andeer reports a number of cases which seem to prove purified resorcin to be a valuable remedy for arresting vomiting, even after other drugs have failed. In these cases the drug was administered internally in doses of 45 grains, and at once arrested emesis as well as, it is claimed, facilitating digestion. Without questioning the truth of these statements, one is naturally led to think of Jäger's "Hair Pills," when one reads further that resorcin also produces a jovial disposition.—*Deutsche Med. Zeitung*, November 24, 1884.

THE VAPOR OF GLYCERIN IN OBSTINATE COUGH.

PROF. TRASTOR, of Nantes, according to the *London Medical Times*, Nov. 29, 1884, employs the vapor of glycerin with great advantage when a cough becomes distressing or fatiguing. Fifty or sixty grammes (two or two-and-a-half fluid ounces) are placed in a porcelain capsule and evaporated over a spirit lamp. An enormous amount of vapor is disengaged. In phthisis and various other affections much relief is gained in this way.

NE SUTOR ULTRA CREPIDAM.

A very comical instance of the result of setting a lawyer to edit a medical journal, is furnished by the June number of the *Medico-Legal Journal*. In reviewing the *Rivista Clinica*, the editor says: "The April number contains a very important paper by Prof. Andrea Cecchevelli, on nephrectomy or the extirpation of the floating liver. The professor not only gives a minute description of an operation performed by him in the presence of the faculty of Parma, in extirpating the right liver," etc.